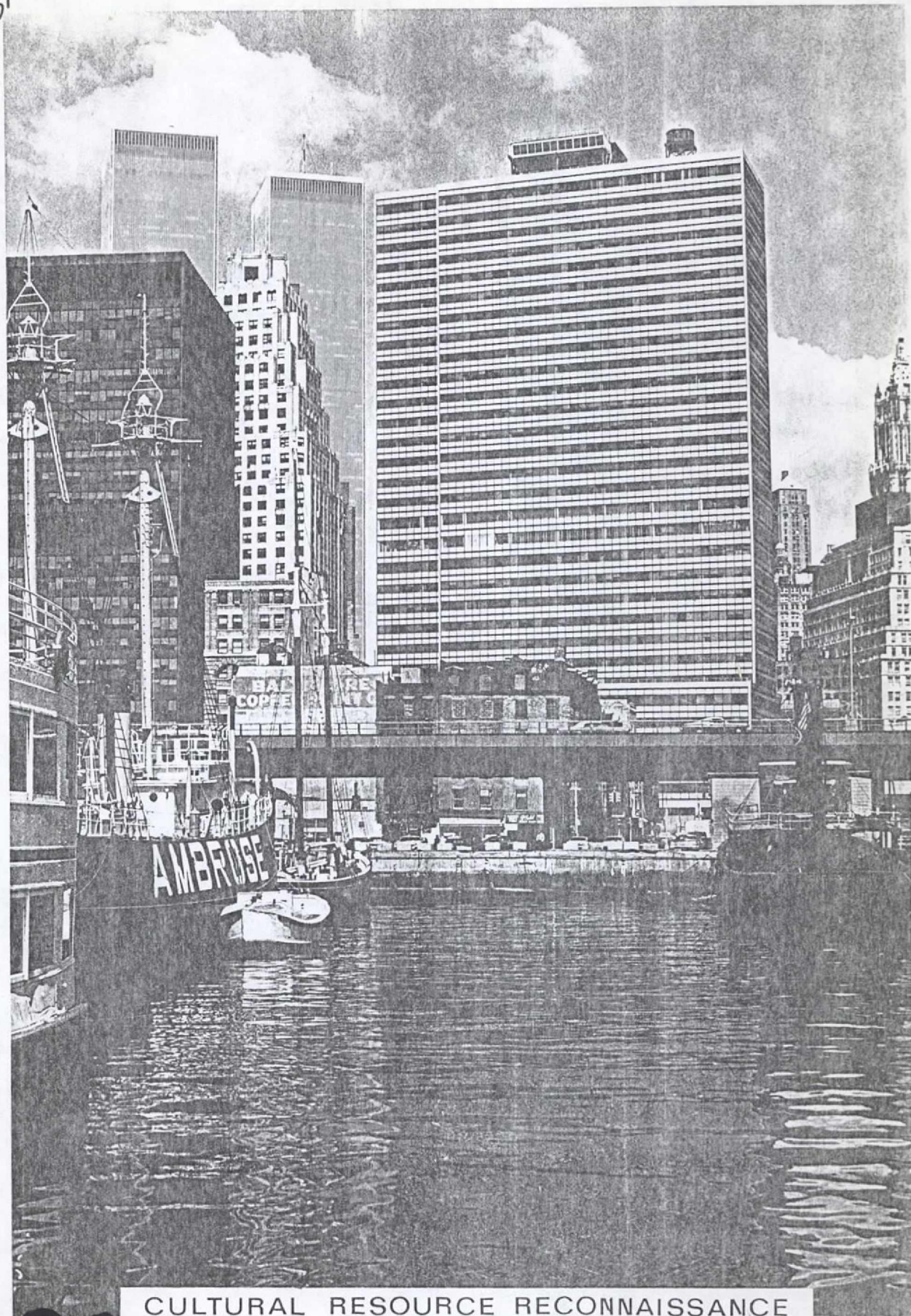


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CULTURAL RESOURCE RECONNAISSANCE
EAST RIVER REACH

S. Kardas † E. Larrabee

③ CULTURAL RESOURCE RECONNAISSANCE
EAST RIVER REACH
NEW YORK HARBOR COLLECTION
& REMOVAL OF DRIFT PROJECT

by

① S. Kardas, Ph.D.
&
E. Larrabee, Ph.D.

Archaeological Consultants
Historic Sites Research

② October 1977

The cover illustration was taken in the SouthStreet Seaport area, between Piers #16 and #17. The five-story buildings on the other side of the elevated highway are part of Schermerhorn Row, erected on newly filled lots about 1811. By mid-19th century the waterfront line was where the highway is now, and before the end of the century it was essentially at the cement sea-wall visible in this picture. This completed a process of land creation that started in the 17th century, when the waterfront was several blocks west of here. (ER 3, X 19, looking NW)

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I. Description of the Project

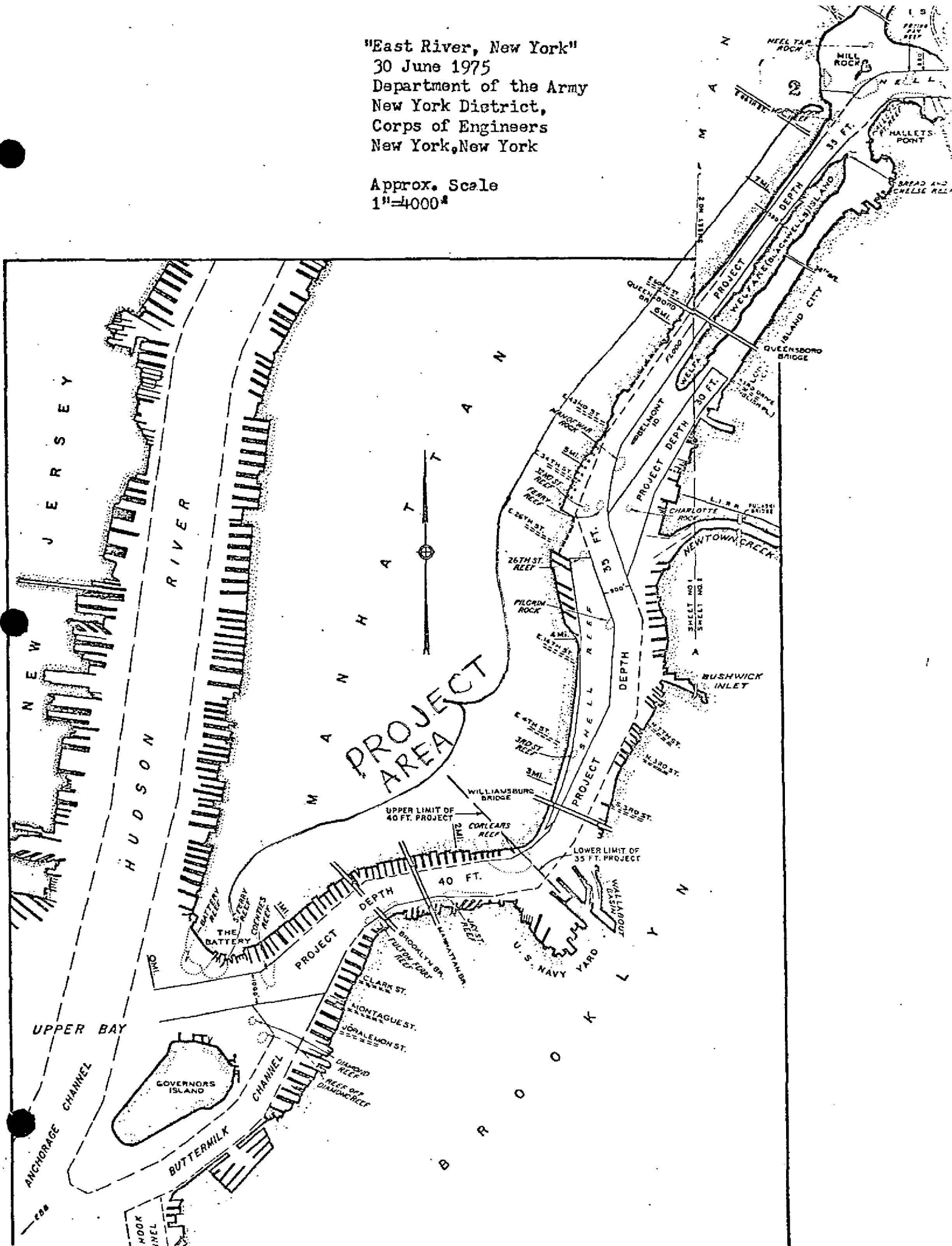
This work was undertaken as part of Purchase Order No. DACW51-77-M-0331 for conduct of a cultural resources reconnaissance on the East River Reach for the New York Harbor - Collection and Removal of Drift Project. Surveys for that Project were authorized by resolutions of the Committee of Public Works, U.S. Senate and the House of Representatives (29 March and 30 April 1963), for removal and disposal of derelict hulks and structures.

The East River Reach, considered in this report, extends from the Battery to 90th Street on the East side of Manhattan. There is no work proposed at the Battery Park itself, so for practical purposes, the project would start at or adjacent to the old Municipal Ferry Piers (the Battery Maritime Building) at 11 South Street (opposite the end of Moore St.), with removal or replacement of dolphins. The distance from there to 90th Street is about 39,400 ft. (7½ miles or 12 kilometers) along the East River waterfront.

At various places along this reach it is proposed to remove rotted and decaying wooden pilings, dolphins and five piers. No derelict vessels would be removed on this reach. At most, waterfront structures, some decayed woodwork would be replaced, and the structures would be repaired. No standing buildings will be directly affected.

"East River, New York"
30 June 1975
Department of the Army
New York District,
Corps of Engineers
New York, New York

Approx. Scale
1"=4000'



II. Methods Used in This Study

As a cultural reconnaissance, this report was required to check the National Register of Historic Places, to consult with the State Historic Preservation Officer for any sites under consideration for nomination to the National Register, and to consult with "knowledgeable" state and local residents and authorities. The latter requirement was met partially with material provided through the courtesy of the New York City Landmarks Commission, partly through a study of the available literature, and partly through consultation with individuals at the New York State Maritime Museum and the South Street Seaport. The result of these consultations, and of examination of the National Register lists and of contact with the State Historical Preservation Office, are presented in Section III.

A reconnaissance survey with limited sub-surface testing was performed in two ways. The entire waterfront affected was examined and photographed from the water, through the courtesy of the U.S. Army Engineer District, New York, and select portions of the study area, mostly near the southern end (the Battery to Brooklyn Bridge, where most affected piers are) were also examined on foot, from South Street or the sea-wall as permitted by fencing.

The limited sub-surface examination was achieved through an intensive excavation performed by the authors during the summer of 1977 on another project. This involved controlled excavation of seven test pits, each about 6 ft. square and from 4 ft. to 10 ft. deep below

basement floor level, into historic fill placed before 1810 in the space between Burling and Beekman Slips (now John St. and Fulton St.) from Front St. extending out to South St. The block in question, now owned by the New York State Department of Parks and Recreation, is occupied by Schermerhorn Row, a set of structures built mostly in 1810-1811, and is a National Historic Landmark. Test pits were made to examine the stability of the foundations and the fill on which they rested, and archaeological control and recording was required for these pits, with recovery of cultural material in documented context. We are currently analyzing the artifactual material for the June-August field work, but it is already clear that the historic fill used to expand New York's land area is a rich cultural resource.

Such specific knowledge is very valuable for the cultural reconnaissance required in this report, because it indicates that any project which cuts into previously undisturbed fill around the periphery of Manhattan will almost certainly destroy important archaeological information. Fortunately, the Collection and Removal of Drift Project on the East River Reach will not make any such cuts into these deposits.

Other techniques used in the study included an examination of published and cartographic material found in the New York Public Library and Libraries and Rutgers and Princeton Universities, a study of archaeological site files maintained by New York University, and of archaeological file material provided by the New York State Museum in Albany. Basically, this was a standard reconnaissance, consisting of collecting and locating

information in official lists and published literature, augmented by visual observation of the entire project and intensive testing of the ground at one extremely significant location on the East River Waterfront.

III. Findings Concerning the Project Area

A. Topographic Setting and Geology

Change in sea level has been projected for the central Atlantic seaboard for a long period of time, and for the New York Harbor specifically for a short period. United States Coast and Geodetic Survey (now the National Oceanographic and Atmospheric Administration) records kept at Fort Hamilton from 1893 to 1932, and at the Battery from 1921 to 1975 indicate an average rate of rise in Mean-Sea Level of about .006 ft. per year over the 82 year period (Office of Tides & Currents, personal communication, 15 Sept. 1977). If this rate can be safely projected for the eighty years before that, it would indicate a rise of about one foot (.972 ft.) since 1810, when well documented construction occurred between the filled-in Burling and Beekman Slips. Projected back even further, which is probably less accurate, this rate would indicate that sea level had risen about two feet in the three and a half centuries since the Dutch first started using the East River waterfront.

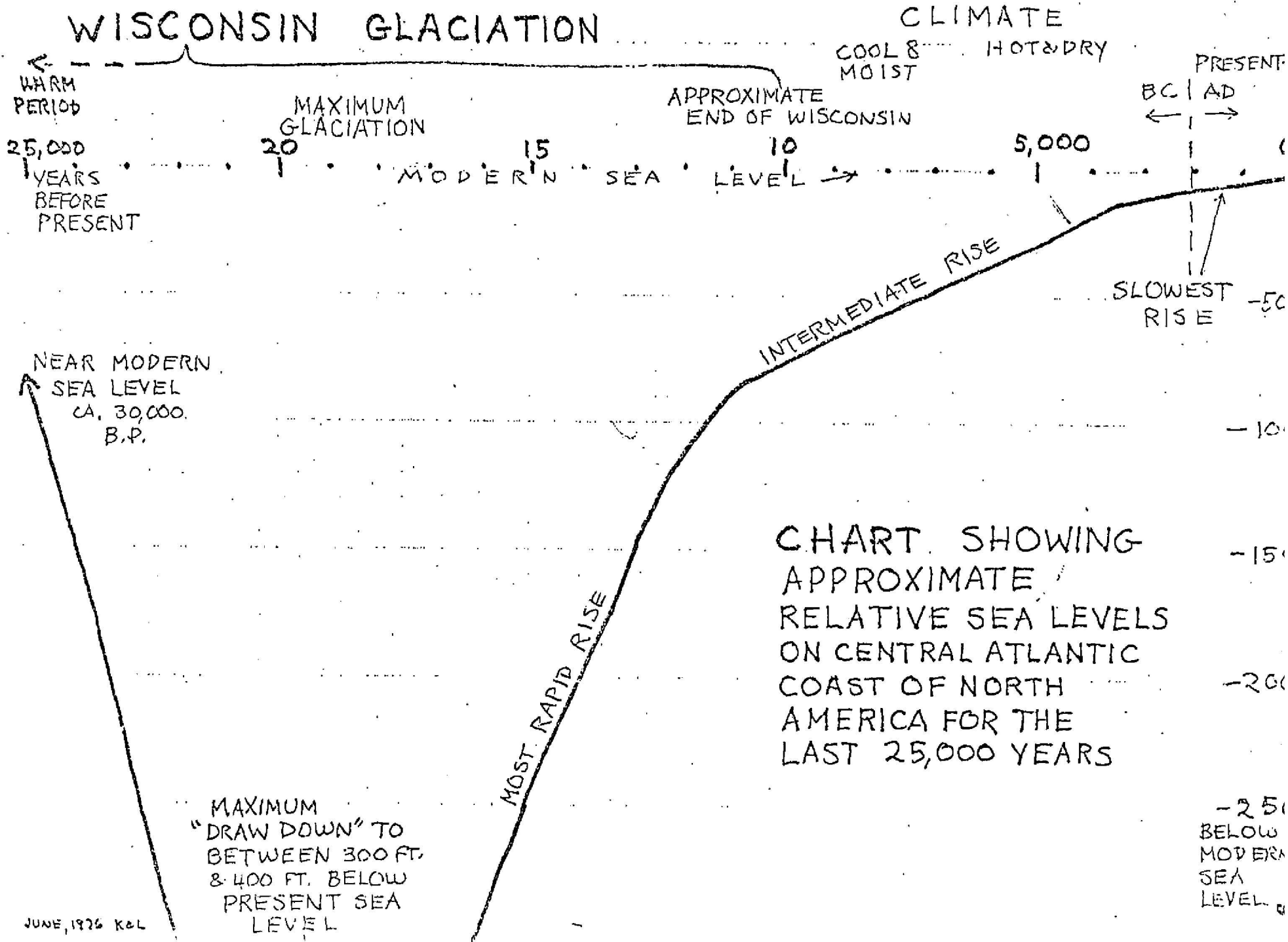
The long period of time is the 19,000 years of the very late Pleistocene and (since ca. 8000 B.C.) the Holocene. Estimates are based on Radiocarbon dates for freshwater peat taken at various known depths from the now submerged continental shelf near the Hudson Canyon, and from oysters that live only in shallow water. This evidence, based on a number of articles (Stuiver & Daddario 1963, J. Kraft 1971, 1976, Newman et al. 1969, Emery et al. 1967, Emery & Garrison 1967, Redfield 1967) has been presented in greater length in a report on dredging plans in the Kill van Kull and Newark Bay (Kardas & Larrabee 1976).

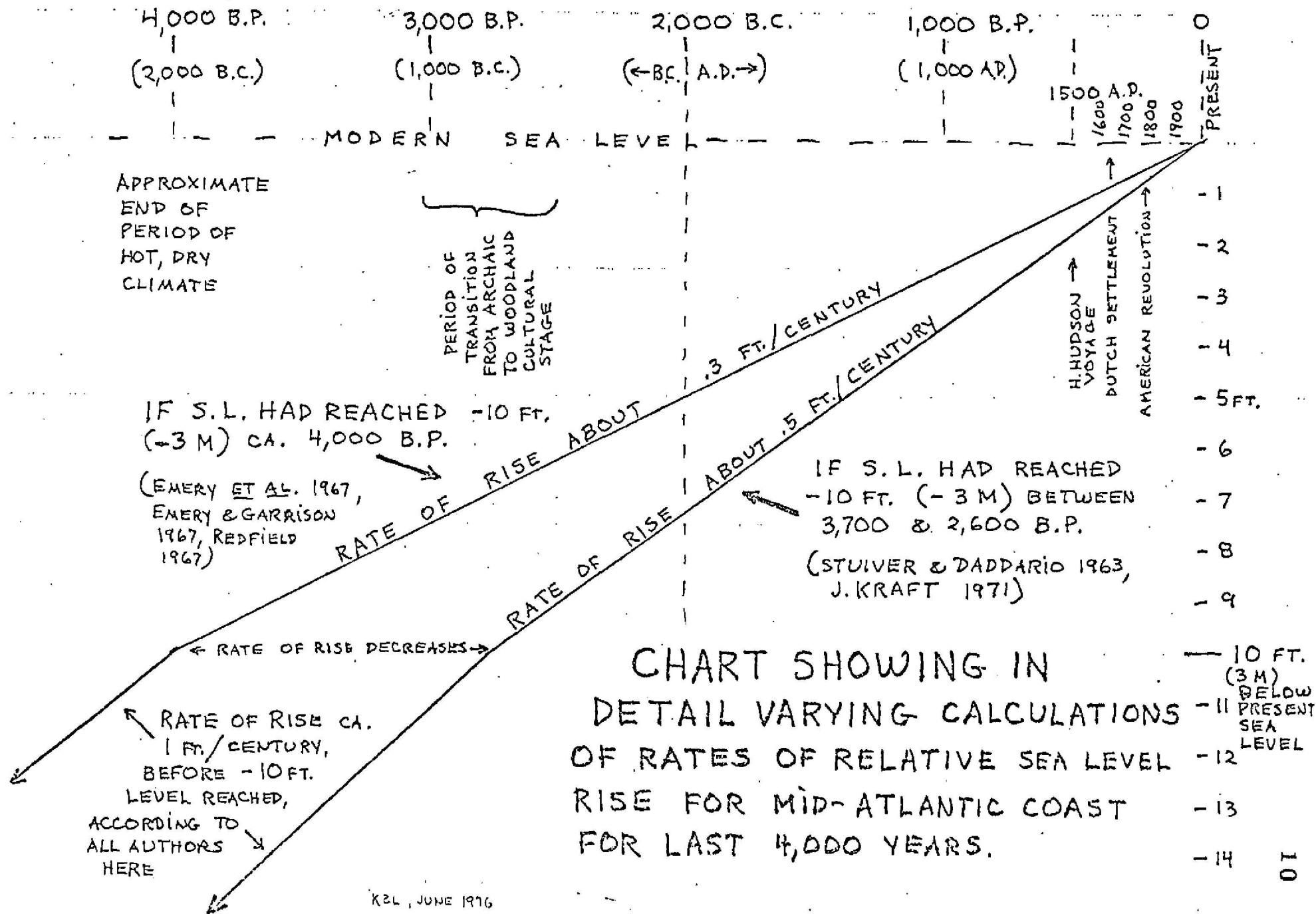
Here we will summarize the findings, which are that world-wide sea level was at a minimum of 300 ft. to 400 ft. below present about 19,000 years ago. At that time the Hudson River flowed through a cut or canyon across some 75 miles of continental shelf which are now submerged. As the final Wisconsin glaciation began to melt, sea level rose, reaching a rate of perhaps 3 or 4 ft. per century at its fastest, probably before 10,000 B.C. After that period the largest glacial masses were gone, and sea level, then about 70 ft. lower than at present, rose more slowly, at about 1 ft. per century. The rate of rise has slowed down again, sometime between 600 B.C. and 2000 B.C., when sea level may have been minus 10 ft. or more from modern level. There is some debate as to how fast the sea level has been rising in this most recent two- to four-thousand year period, but in general the rate is projected as between .25 ft. and .5 ft. per century.

Considering the extrapolations on which these estimates have been based, we consider it a remarkable convergence of findings that the last 82 years of carefully measured readings indicate a rise (for that period) of .006 ft. per year, which would be .6 ft. per century. Because the longer range estimates are also averages, a faster rate for a specific period need not be taken as a major deviation, indicative of a significant increase in the rate of sea-level rise. Rather, we feel that this preliminary analysis suggests an average rate of about .5 ft. per century is reasonably accurate, with various fluctuations. This is based on

both long term and short term data. Included here are two charts from the Kill van Kull report, illustrating the long range rates of sea level rise.

WISCONSIN GLACIATION





The effect along the East River waterfront of lower sea levels in the past is obvious. At radically lower levels (i.e., before 8000 B.C., when levels were -70 ft. or more) the East River would not have been a river. Some time in the last five or six thousand years it was gradually flooded, and based on 1853 pre-dredging Coast Survey soundings (Viele 1855) which indicate a channel of between about 40 ft. and 60 ft. depth in the mid-19th century, it has been a substantial body of water for at least the last several thousand years.

However, even as recently as a few centuries before the Dutch came, overall levels were 3 or 4 ft. lower than at present, with the result that rocks (like those projecting through the seawall of Manhattan opposite Roosevelt Island) which are subject daily to tidal submergence now were then above all but storm tides, and probably were separated from the river by some tide flats. Certainly the shoreline was further into the river than it would be now, if it were not for human activities.

Thus a line such as the present South Street which can be documented to be lying hundreds of feet beyond (south east of, in most cases) the early Dutch shoreline, was itself the shoreline at a much earlier period and a lower sea level. Paleo-Indian and Archaic period humans doubtless were able to walk on surfaces which (if not long since dredged away or buried) would be beneath the East River today. This can be illustrated by examining borings and depth readings made in the 20th century, which reveal a considerable thickness (10 to 15 Ft.) of soft

organic silt, at elevations of -5 ft. to -20 ft., lying beneath modern fill, and overlying thick deposits of sand and some clay above bed-rock. Some of this was exposed land at lower sea-levels, and it may be largely created by peat-like or similar depositional conditions as the East River bed-rock depression (probably glacially cut) was gradually submerged beneath rising seas.

The following schematic diagram shows the relationship of changes upward in sea-level over several thousand years to expansion outward of the waterfront line through man-made filling over the last three centuries. It is an imaginary cross section along a line running from northwest to southeast between and roughly parallel to Fulton and John Streets, and crossing Pearl, Water, Front, and South Streets. The horizontal scale is greatly compressed, and the vertical scale does not permit showing full depth to bedrock. It is based on the authors' own excavations during the summer of 1977, and on the following drawings made available through courtesy of Spiegel and Zamechnik, Inc, of New Haven, Connecticut:

Agreement "DQ", Borings Made by Osborne Drilling Corp., 195
Washington St., New York City, for Board of Transportation of the
City of New York. Drawn by R.E.T., April, 1925.

Route No. 101, Section No. 1, Contract Drawing No. A-2, May 9, 1926
Agreement "E-H", Route 101-A-1, Borings made in the East River, New
York City, by E.J. Longyear Exploration Co., Minneapolis, Minnesota,
for the Board of Transportation of the City of New York, July 9, 1926

The Port of New York Authority, World Trade Center Study (East Side)
Typical Geologic Profiles, Dwg. WTC-SL-000, 10-24-60.

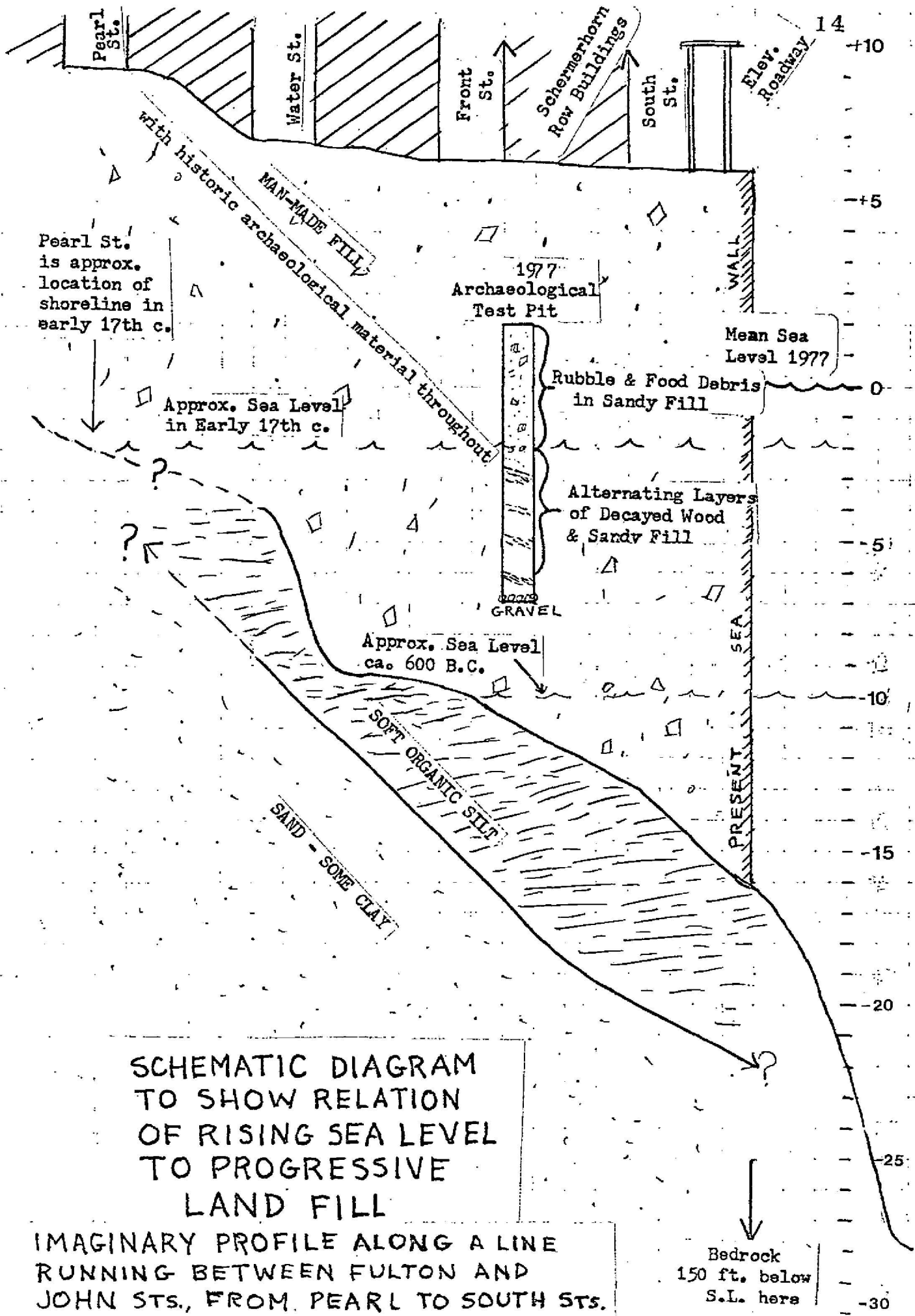
The Port of New York Authority, World Trade Center Study (East Side),
Geologic Profiles, Dwgs. WTC-SL-001, -002, -003, 004, -005, & -006, Jan.26, 1961.

As can be seen, these changes in natural topography have been overwhelmed in the last three centuries by man-made changes. Even as the sea has been rising, New Yorkers have been creating land by fill, and both raising surface levels and greatly extending the land surface out into the East River, as well as into other parts of New York harbor, so that in most places the effect of higher sea level has been completely masked. The specifics of this filling will be discussed in section III E.

While the archaeological excavations and test borings used for this schematic profile are all in one area near the present South Street Seaport, it is the opinion of the authors of this report that the situation here is typical of the East River waterfront, except for those few places where rock still protrudes under the seawall, near the north end of the project.

Historical, cartographic, and visual evidence agrees in showing that the East River waterfront has been progressively built outward from the earliest historic shoreline, and that in general this process occurred earlier at the south end, by the Battery, and spread northward over a period of about two and a half centuries. Evidence from archaeological salvage at Old Slip indicated early to mid-18th century fill. The 1977 tests at Schermerhorn Row were in material dating from the mid-18th century to the very early 19th century. If a similar sample were taken within a block behind the seawall as far north as 12th St., for example, it would probably produce mid-19th century artifacts (see p. 52), while one taken near the Turtle Bay district in the upper 40 streets would reveal early to mid-20th century material deposited before the United Nations complex was built.

Thus the deposits of land-fill behind the present seawall will be of different ages and composition in various places, but all will share the attribute of reflecting the technology and cultural behavior of the era in which the deposition occurred. These deposits constitute a continuous record of the material culture and physical expansion of New York, and so are of great archaeological interest.



Pearl St. is approx. location of shoreline in early 17th c.

Approx. Sea Level in Early 17th c.

Approx. Sea Level ca. 600 B.C.

Mean Sea Level 1977

Rubble & Food Debris in Sandy Fill

Alternating Layers of Decayed Wood & Sandy Fill

GRAVEL

SOFT ORGANIC SILT

SAND - SOME CLAY

PRESENT SEA

Bedrock 150 ft. below S.L. here

SCHEMATIC DIAGRAM TO SHOW RELATION OF RISING SEA LEVEL TO PROGRESSIVE LAND FILL

IMAGINARY PROFILE ALONG A LINE RUNNING BETWEEN FULTON AND JOHN STS., FROM PEARL TO SOUTH STS.

B. Recorded Prehistoric Archaeological Sites in the Vicinity

The cultures found in coastal New York are assignable to two archaeological patterns, Archaic and Woodland. These begin in pre-agricultural hunting and gathering patterns and continue through horticultural subsistence Woodland village dwellers into the Colonial Period.

Historically it is possible to reconstruct tribal ownership of the lands now covered by New York City and vicinity. The Wappinger Confederacy (part of the Delaware or Algonkian-speaking peoples) held the region from Poughkeepsie south to Manhattan Island and eastward across the southern part of the mainland into Connecticut as far as the Housatonic River. (Smith 1950: 104).

Most of the Island of Manhattan was not utilized by the Indians as a habitation area, with the exception of the area near Spuyten Duyvill, the Harlem River and some isolated sites. The most extensive collection of data referring to the Island of Manhattan was made in the late 19th Century and early 20th Century by R.P. Bolton. His studies showed several trails connecting the tip of Manhattan (the Battery) with the East River and Hudson and running up the middle of the Island to settlements. The nearest sites recorded for the southeast tip of Manhattan are his sites 1 and 3:

1. "Kapsee- The extremity of the island of Manhattan; probably applied also to the rocks in the tideway." (Bolton 1922:220)

3. "Rechtauck or Rechtanck- A village site on Corlears Hook, on Manhattan Island. Natives who had taken refuge there were massacred by Dutch soldiers at the order of Governor William Kieft, 1643. The most natural position for such station was near a fresh-water pond and brook at the present Jefferson,

Henry, Clinton and Madison streets, facing south on an open beach on East River." (Bolton 1922: 221)

This spot was suitable for habitation due to the presence of a fresh water pond, and sheltered exposure on the Sandy Bluffs facing the East River. (Bolton 1922: 57)

The lack of fresh water sites in the southern part of Manhattan rendered the area unsuitable for habitation, and that portion of the Island served primarily as a passageway connecting important trade networks with more desirable areas such as Long Island, Staten Island, Westchester County, and the Minisink Trail. The narrow space and rugged character of the lower part of Manhattan Island did not lend itself to aboriginal settlement.

These sites are reconstructed on ethnohistorical and cartographic evidence, and no excavation has taken place to confirm the locations. It is probable that massive urban construction has destroyed all evidence. In any event, the sites would have been set back slightly from the beach or shoreline, and that shoreline was, in most places, several blocks inland from the present shore, so it is clear that the proposed drift removal project will have no adverse impact on any known or probable prehistoric archaeological sites.



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SHERBOURNE

Bolton 1922: Map VIII-A

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C. Recorded Historic Archaeological Sites

Very little scientific excavation of historic sites has been conducted on Manhattan, despite the wealth of archaeological material left from three centuries of intense activity by millions of people of Old World origin who have lived and worked here since the first Dutch settlements. From time to time, during the process of major construction projects, well publicized "finds" have been made, and a few objects salvaged. A particularly well known example is the discovery of the Dutch ship "Tijger", which burned in 1614. This was found in 1916, when a subway tunnel was dug. At the time of construction of the World Trade Center, additional efforts were made, but no more of the ship was located. (Hallowell 1974).

Closer to the project area are one salvage excavation, and one controlled sample of tests in 18th century fill. The first occurred at Old Slip in September 1969, when Paul Huey and others of the New York State Department of Parks and Recreation, Division of Historic Preservation, salvaged several glass and ceramic vessels, shoe leather fragments, and other apparently 18th century objects from fill, and recorded the appearance of log crib-work which was used for retention of fill. (Huey 1969). The second occurred during the summer of 1977, when seven test pits were dug in basements of various buildings in Schermerhorn Row, the block bounded by Front, Fulton (or Beekmans Slip), South, and John Streets (or Burling Slip). The tests were dug to examine stability of foundations and compaction of fill for the State of

New York, which owns this block as part of the N.Y. State Maritime Museum. Excavation was done under the control of archaeologists, with recovery of artifacts and recording of stratigraphy. The results are still being analyzed, but it is already clear that predictions concerning the wealth of cultural information contained in the many layers of fill have been thoroughly justified. The artifact-filled earth and rubble with which Manhattan has been expanded constitutes an enormous midden, and careful excavation such as this is needed to take advantage of the tremendous cultural resource this represents. (Kardas & Larrabee 1977).

Fortunately, the drift removal project will not come closer than several hundred feet to either of these archaeological sites, and then only to repair or replace pilings along the sea-walls by Pier #6, and in the South Street Seaport area. Such improvements should not cause harm to the archaeological sites.

D. Recorded Historic and Landmark Structures:

The places which are on the National Register of Historic Places or on the New York City Landmarks listing are listed below, in order from south (the Battery) to north (at 90th St.) along the East River frontage of Manhattan.

1) The Battery- Castle Clinton

Address: Battery Park

Status: National Monument

Built before the War of 1812 by John McComb, Jr., this building was originally offshore at the end of a 200 ft. causeway. It is now completely surrounded by man-made land. It was built in a ring form and open at the top. None of its guns ever fired a shot in warfare. In 1823 the federal government gave it to the City of New York, which changed the name to Castle Garden and leased it as a "place of resort". In 1845, it was roofed over and became a home for musical entertainment. In 1855, Castle Garden was converted into an "Emigrant Landing Depot". Then, in 1896, after Ellis Island became the processing place for immigrants, it became the New York City Aquarium. In 1946, it was declared a National Landmark and has been returned to its original fortress form by the National Park Service.

Bibliographic References:

Goldstone and Dalrymple 1974: 102-104

2. Municipal Ferry Piers

Address: 11 South Street.

Status: In National Register of Historic Places

New York City Landmark

Built in 1909, this is the last of the old ferry terminals.

Bibliographic References: Landmarks 1974:26

Goldstone and Dalrymple 1974:107-08

3. South Street Seaport Historic District

Address: Bounded by Burling (John Street) and Peck Slips and Water and South Streets.

Status: In National Register of Historic Places

South Street Seaport is a non-profit organization founded in 1967 to preserve and restore New York's 19th century waterfront.

Bibliographic References: Goldstone and Dalrymple 1974: 86-87

Note: The acceptance of seven of the ships moored at the South Street Seaport onto the National Register is pending as of September 1977.

Also pending is an Amendment which will enlarge the South Street Seaport Historic District to include most of the area of historic buildings placed on land fill. This will go north to the Brooklyn Bridge, west to Pearl Street and south to Fletcher Alley. (Personal Communication, Elizabeth Spencer-Ralph, N.Y.S.H.P.O., 19 Sept. 1977). Also included will be more of the water, and piers in this area.

Schermerhorn Row, already on the National Register, will be within this enlarged district.

At present, the South Street Seaport rents Pier 16 and the apron between Piers 15 and 16 from the City of New York on a 99 year lease. The Department of Ports & Terminals, City of New York, proposes to

employ a Public Works Grant for repair of these rented structures, and as much of Pier 15 as funds will allow. The Seaport, as such, does not have any jurisdiction beyond these limits, although it has an obvious cultural interest in the historical nature of its surroundings.

(Christopher Newbold, South Street Seaport, Personal Communication, Sept., 1977).

4. Schermerhorn Row

Address: Fulton St. between South and Front Streets

Status: In the National Register of Historic Places

Built between 1811 and 1812 by Peter Schermerhorn, this was one of the earliest commercial rows of Federalist style buildings in the city. It is now the only surviving example of this type of building.

5. Brooklyn Bridge

Address: City Hall Park, Manhattan to Cadman Plaza, Brooklyn

Status: National Historic Landmark

New York City Landmark

Built 1867-1883

Bibliographic References: Landmarks 1974:24

Goldstone and Dalrymple 1974: 104-06

6. Arch and Colonnade of the Manhattan Bridge Approach

Address: Bridge Plaza at Canal Street

Status: New York City Landmark

Bridge opened 1909

Bibliographic References: Landmarks 1977

Kouwenhoven 1953: 466

7. Williamsburg Bridge

Status: Not on New York City Landmarks list or on National Register

Built 1903

Bibliographic References: Goldstone and Dalrymple 1974: 435

8. Public Baths

Address: East 23rd Street and Asser Levy Place

Status: New York City Landmark

Under consideration for nomination to National Register.

Bibliographic References: Landmarks 1975: Community District No.

6, LP-0842

9. United Nations

Address: East of First Ave. between Forty-second and Forty-eighth Streets

Built 1949-52, with internationally known architects, this is a cultural and architectural resource of great importance.

Bibliographic References: Kouwenhoven:1953: 517

Status: Of Nation Register quality, but on international soil,|

and so not nominated. |

10. Queensboro Bridge

Address: Manhattan to Queens at 59th Street

Status: New York City Landmark

Opened 1909.

Bibliographic References: Goldstone and Dalrymple 1974:467

Landmarks 1975: Community District No. 8, LP-0828

11. Blackwell House

Address: Roosevelt Island, approximately opposite East 65th St.

Status: In National Register of Historic Places

New York City Landmark

Bibliographic References: Landmarks 1975: Community District No.8,

LP-0585

12. Smallpox Hospital

Address: Roosevelt Island, approximately opposite East 50th St.

Status: In National Register of Historic Places

New York City Landmark

Bibliographic References: Landmarks 1975: Community District No.8,

LP-0690

Goldstone and Dalrymple 1974: 232

13. Strecker Laboratory

Address: Roosevelt Island, approximately opposite East 52nd St.

Status: In National Register of Historic Places

New York City Landmark

Bibliographic References: Landmarks 1975: Community District No.8.

LP-0693

14. Lunatic Asylum Octagon House

Address: Roosevelt Island opposite East 79th St.

Status: In National Register of Historic Places

New York City Landmark

Bibliographic References: Landmarks 1975: Community District No. 8,

LP-0693

15. Lighthouse

Address: Roosevelt Island, approximately opposite East 86th Street

Status: In National Register of Historic Places

New York City Landmark

Bibliographic References: Landmarks 1975: Community District No.8,

LP-0694

16. Gracie Mansion

Address: East End Ave. at 88th St. in Carl Schurz Park

Status: In National Register of Historic Places

New York City Landmark

This is the original site of the 1774 house of Loyalist Jacob Walton and Thompson's Battery. These were destroyed in September 1776 during the battle for Manhattan by British fire from Brooklyn. Archibald Gracie bought the land and built the present house on it from 1799-1801. It was purchased by the city in 1887. From 1923 to 1942 it housed the Museum of the City of New York. Then, in 1942, it became the Mayor's Mansion. A new wing was added in 1966.

Bibliographic References: Goldstone and Dalrymple 1974: 246-48

Landmarks 1975: Community District No.8, LP-0179

17. Municipal Asphalt Plant

Address: 90-91 Streets at East River Drive

Status: New York City Landmark

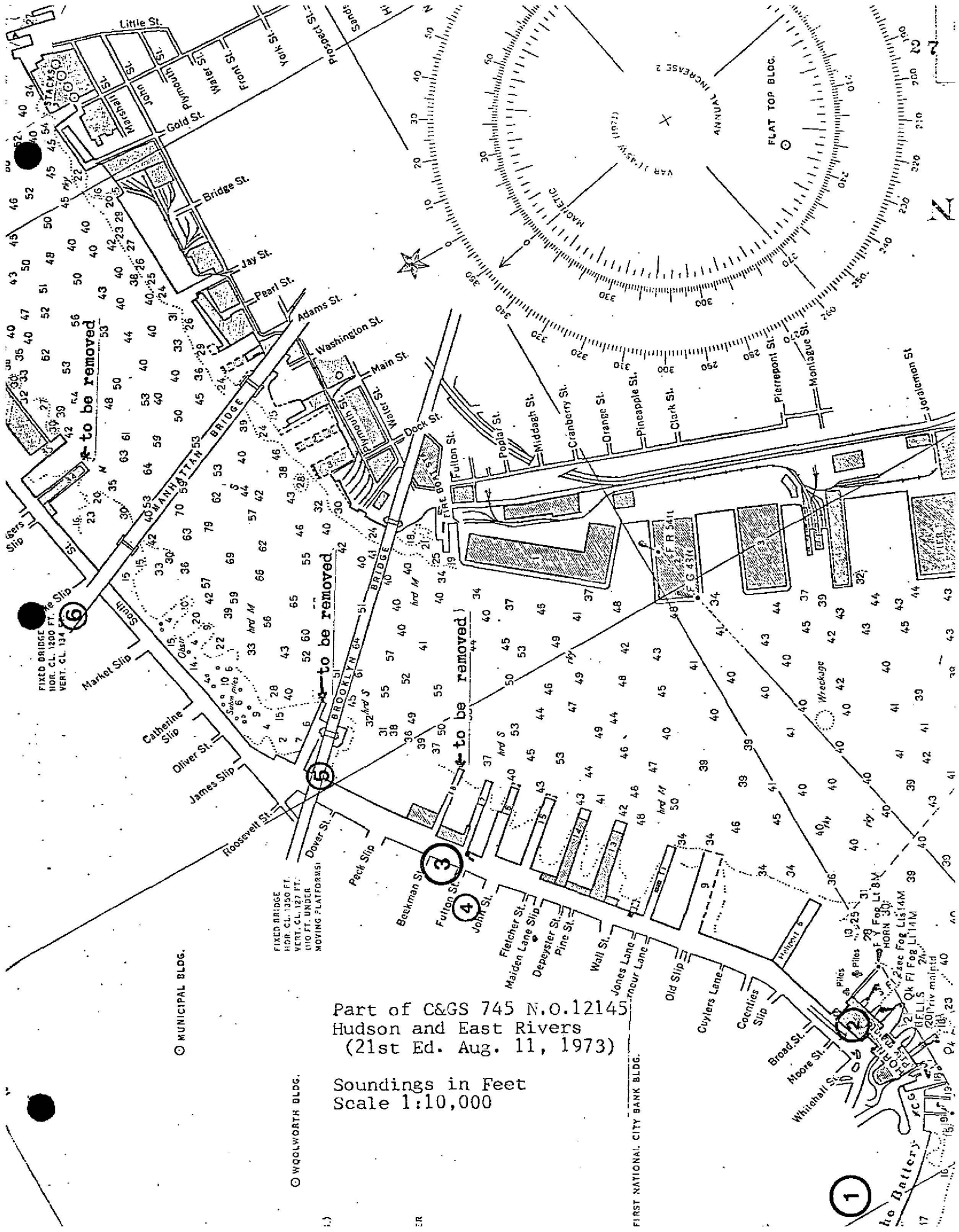
Built in 1944, this building was designed by the architects Kahn and Jacobs.

Bibliographic References: Kouwenhoven 1953: 495

Landmarks 1977

Note: Items 1 through 13 are marked on the portions of C & G S chart which follow.

The foregoing list in no way represents all the structures potentially eligible for Nomination the National Register of Historic places, but only those on it or in the process of being placed on it.



Part of C&GS 745 N.O.12145
 Hudson and East Rivers
 (21st Ed. Aug. 11, 1973)

Soundings in Feet
 Scale 1:10,000

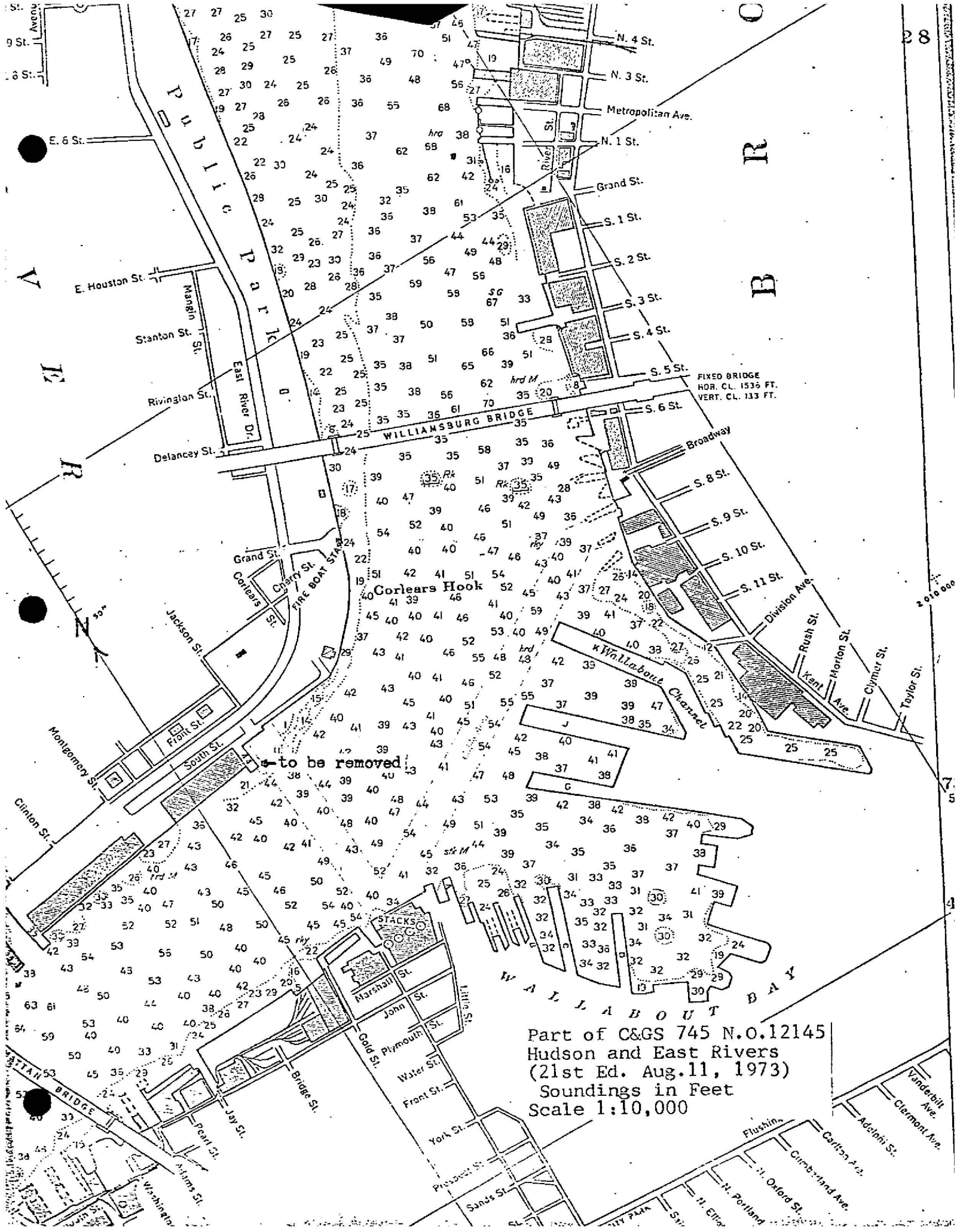
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© WOOLWORTH BLDG.

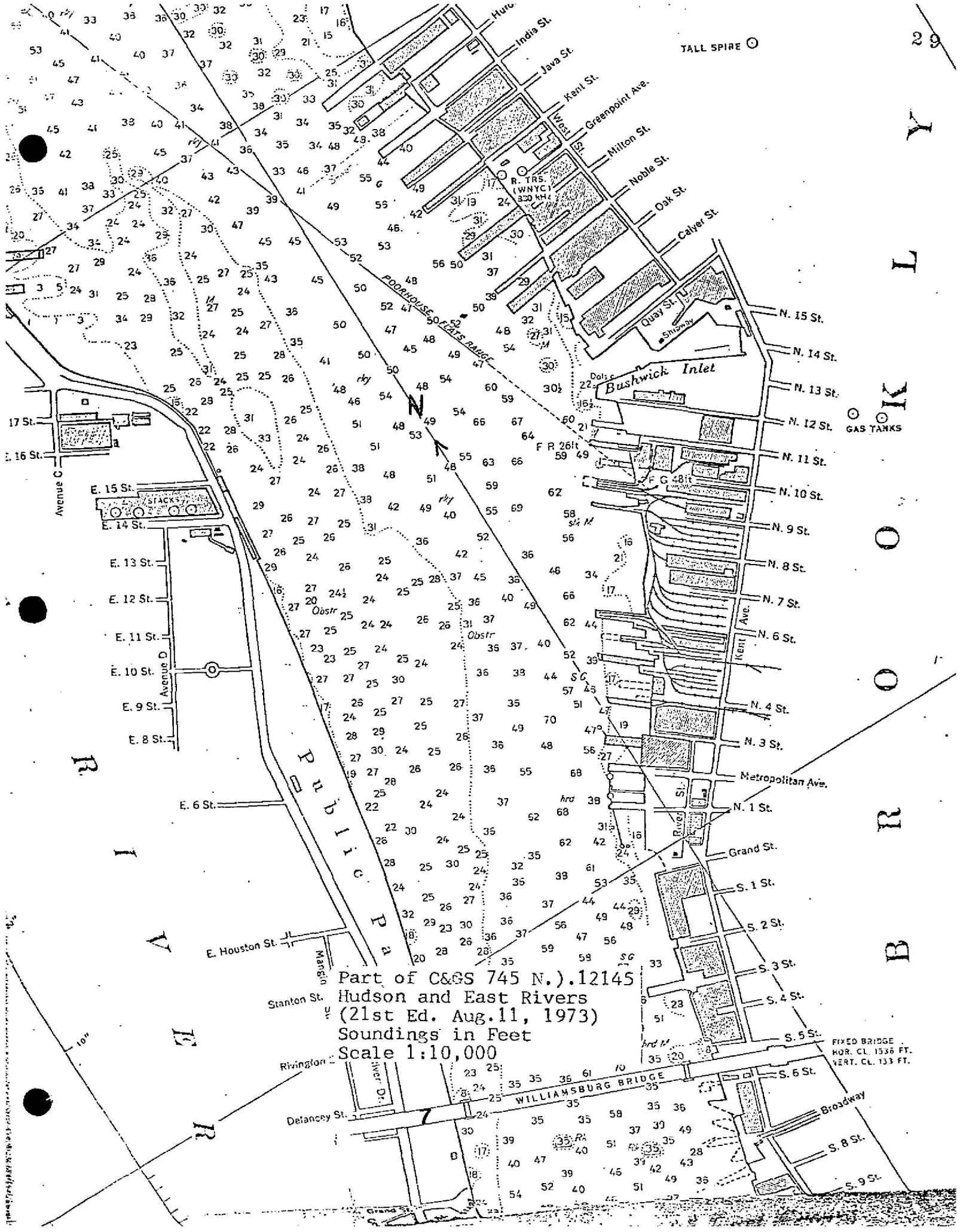
FIXED BRIDGE
 HOR. CL. 1350 FT.
 VERT. CL. 127 FT.
 610 FT. UNDER
 MOVING PLATFORMS

FIXED BRIDGE
 HOR. CL. 1300 FT.
 VERT. CL. 134 FT.

1



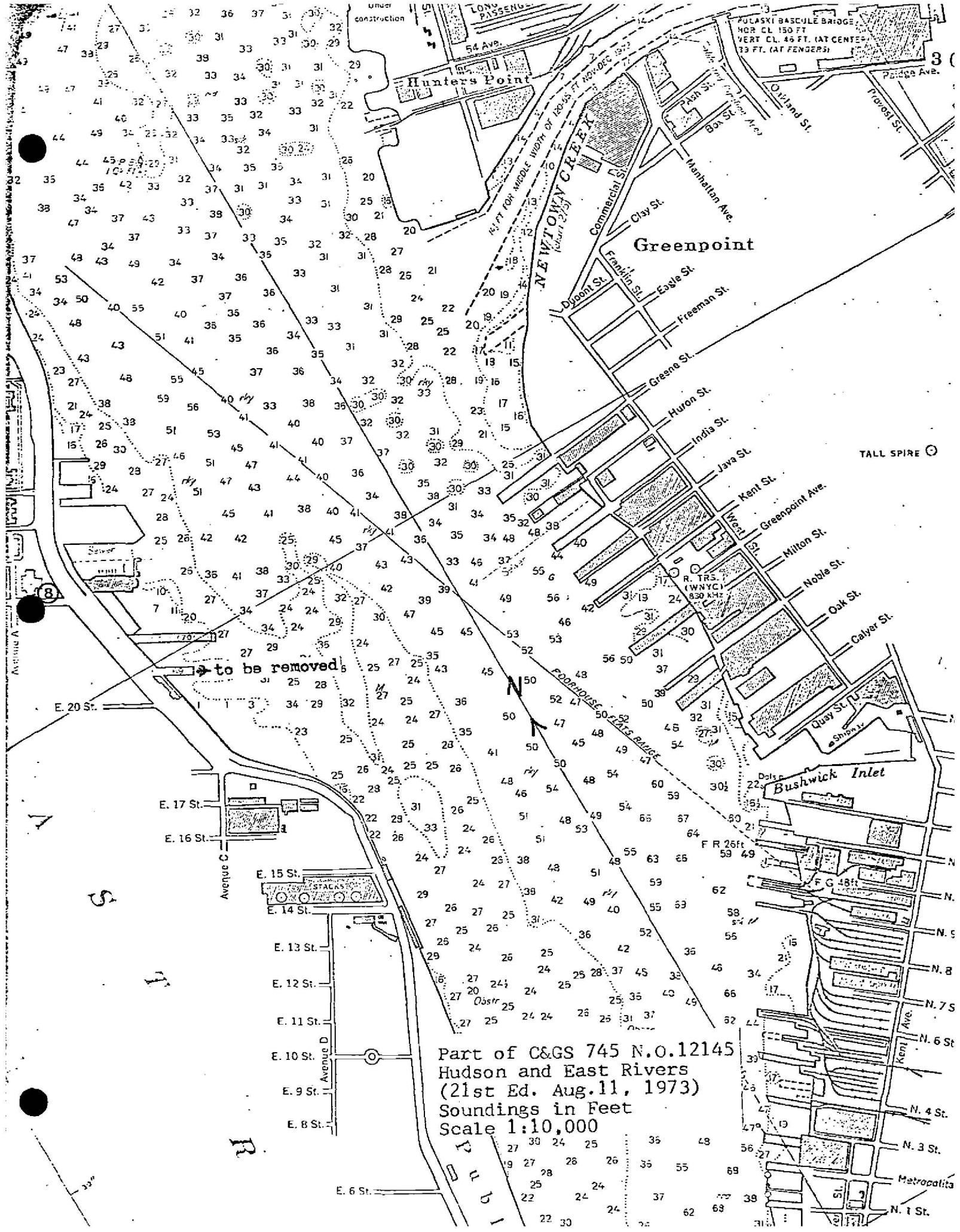
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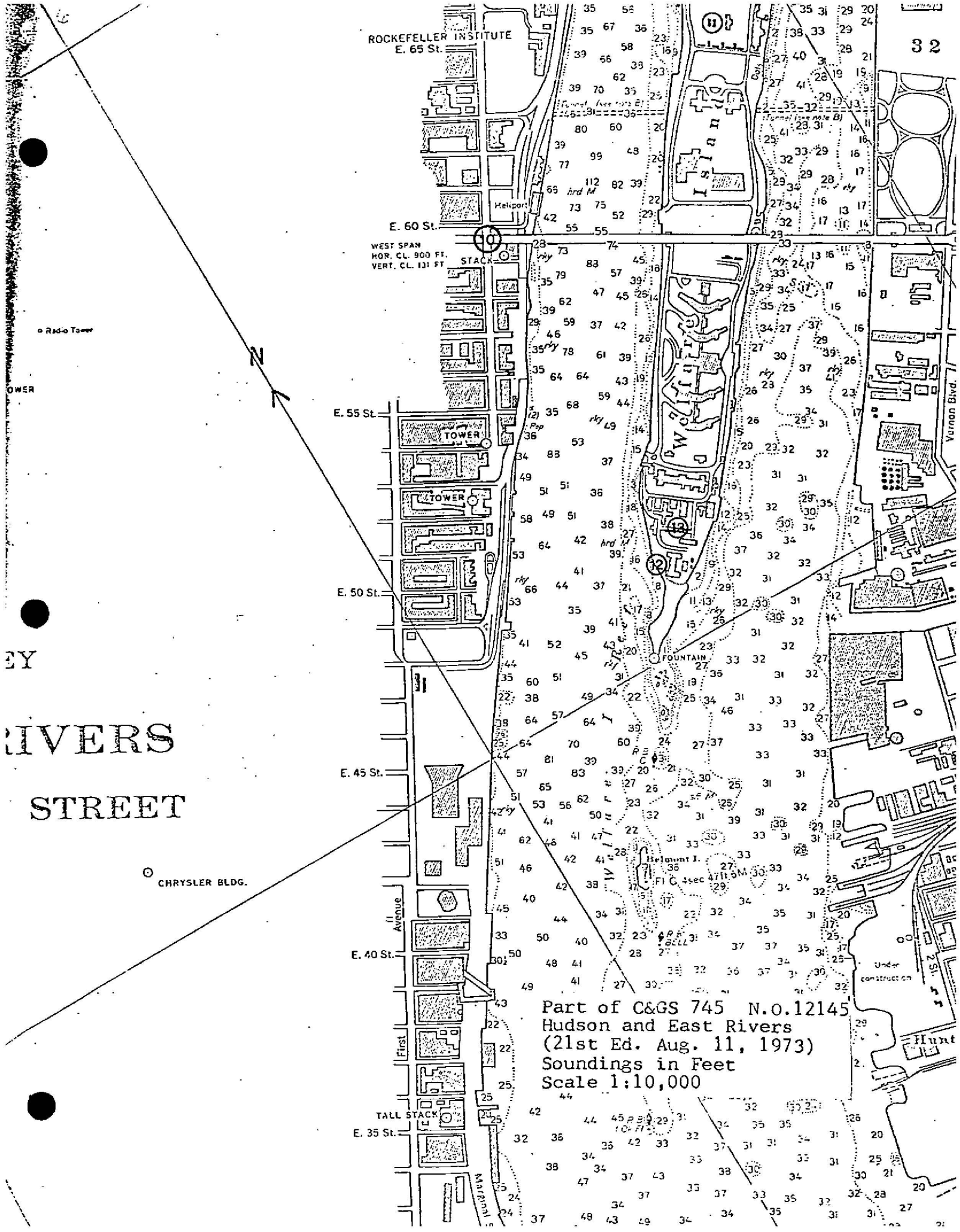
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FIXED BRIDGE
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Part of C&GS 745 N.O.12145
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 (21st Ed. Aug.11, 1973)
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ROCKEFELLER INSTITUTE
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E. 60 St.

WEST SPAN
HOR. CL. 900 FT.
VERT. CL. 131 FT.

E. 55 St.

E. 50 St.

E. 45 St.

E. 40 St.

E. 35 St.

Radio Tower

RIVERS
STREET

CHRYSLER BLDG.

Part of C&GS 745 N.O.12145
Hudson and East Rivers
(21st Ed. Aug. 11, 1973)
Soundings in Feet
Scale 1:10,000

32

Hunt

Under construction

TALL STACK

First Avenue

Marion St.

Vernon Blvd.

Helmont I.

Fountain

Rockefeller Institute

West Span

Chrysler Bldg.

Radio Tower

Hudson River

East River

Soundings

Scale

1:10,000

Aug. 11, 1973

N.O.12145

C&GS 745

Hudson and East Rivers

Part of

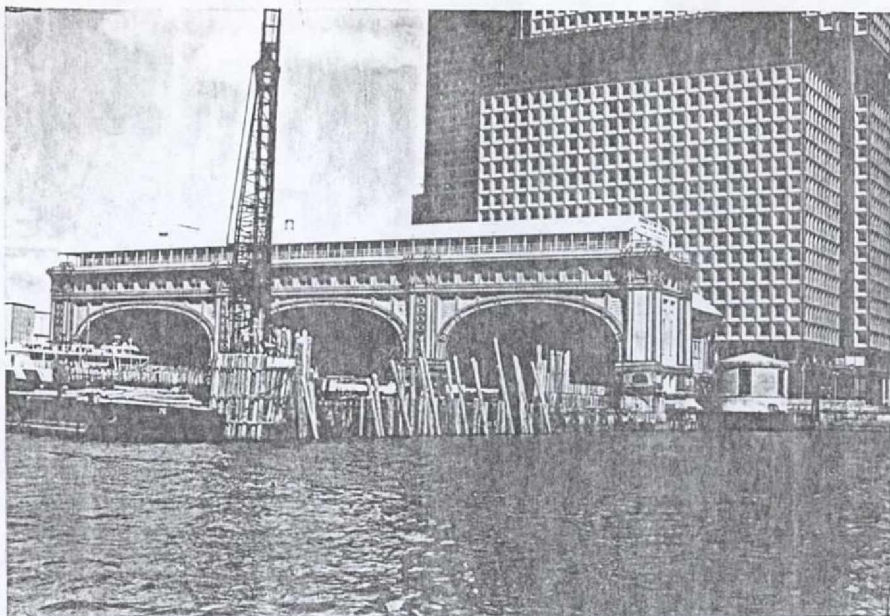


Plate 1. View of the Old South Brooklyn Municipal Ferry Piers, now the Battery Maritime Building, at 11 South Street. This 1909 structure is the last of the old ferry terminals. There will be no impact on this City Landmark structure, but some dolphins may be replaced, and Pier #6 immediately to the east would be repaired. (ER3, X11, looking NW)

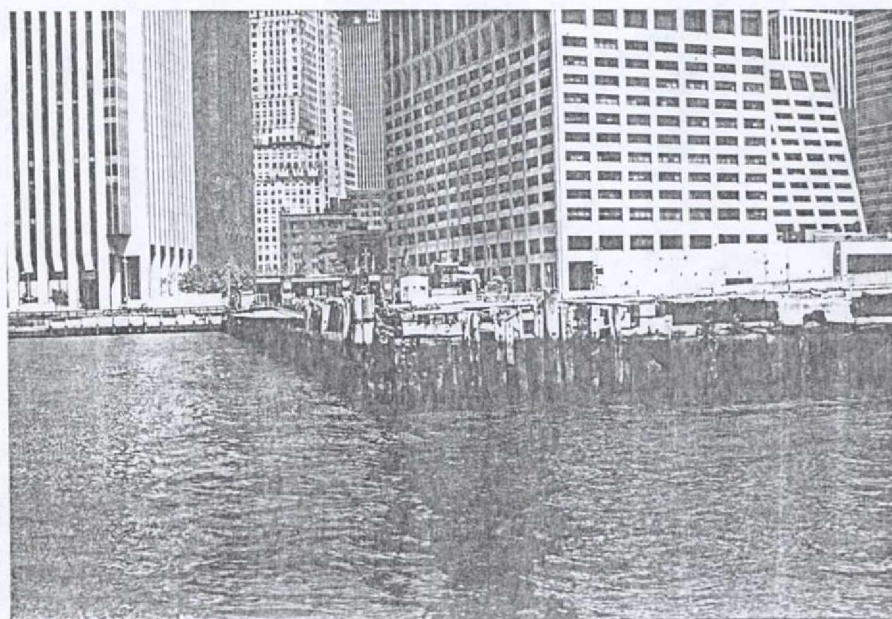


Plate 2. View of decayed pilings and surfacing of Pier #6. The waterfront line of solid fill behind this is of 19th century date, and the pier is more recent. Repair of this structure will not affect any cultural resources. The open space behind it, formed in the angle between the two diverging buildings, was once Coenties Slip, which was filled in after 1807. (ER3, X12, looking NW)

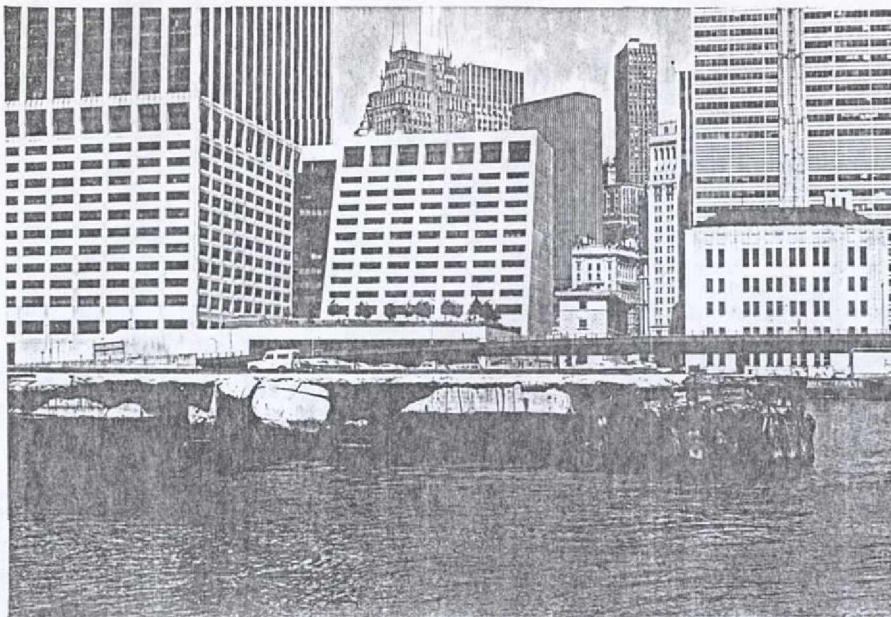


Plate 3. View of the outer end of Pier #9. Like Pier #6, this will be repaired. No historic resources will be affected by this work. The small building visible behind the elevated highway stands in Old Slip, another early basin in the expanding East River Water Front. It was filled in after 1807. (ER3, X15, looking NxNW)

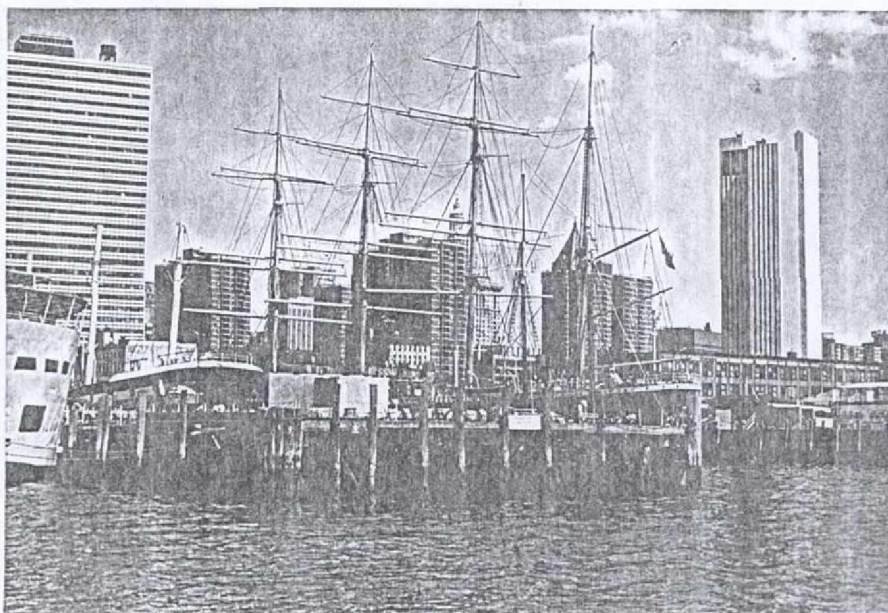


Plate 4. View of the outer end of Pier #15, in the South Street Seaport Museum area. This pier would be repaired under this project. No cultural resources would be damaged. (ER3, X16, looking N)

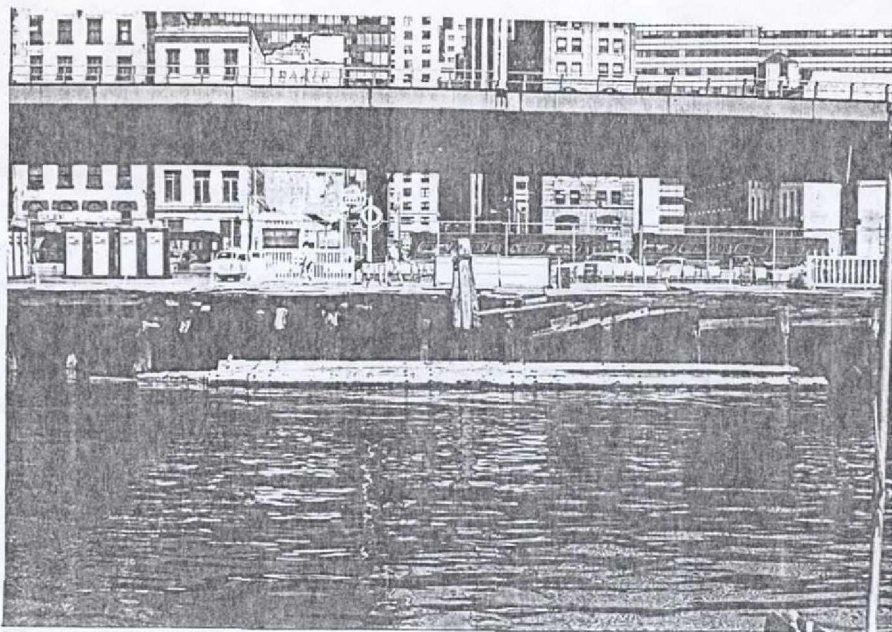


Plate 5. Section of Waterfront between Piers #15 and #16, looking directly into the open square that was Burling Slip, which was filled in by 1775. It is proposed to repair this and other decayed sections. The earliest waterfront was set several blocks back, and the present line was established as recently as the early 20th century. Repair here will not harm any cultural resources. (ER3, X17, looking NW)

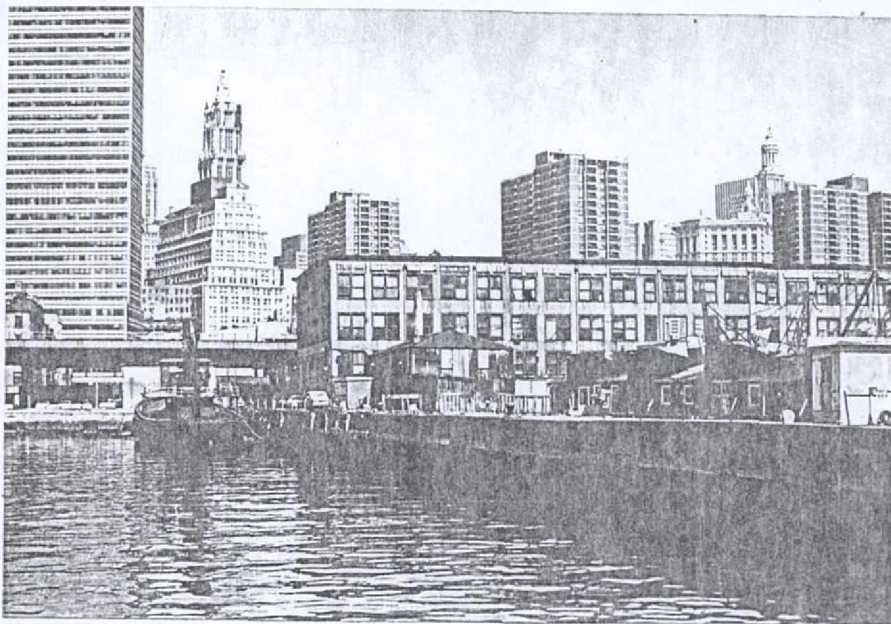


Plate 6. Pier #17 would be repaired. The long three story building between the camera and the elevated highway is the Fulton Street Fish Market, built on the site of the old Brooklyn Ferry. To the left of that is the open space of Fulton Street, which was Beekman Slip, filled in by 1775. Left of that can be seen the corner of the 1811 Schermerhorn Row (the N.Y. State Maritime Museum) containing Sweets Restaurant. None of these historic resources would be affected. (ER3, X18, looking NxNW)

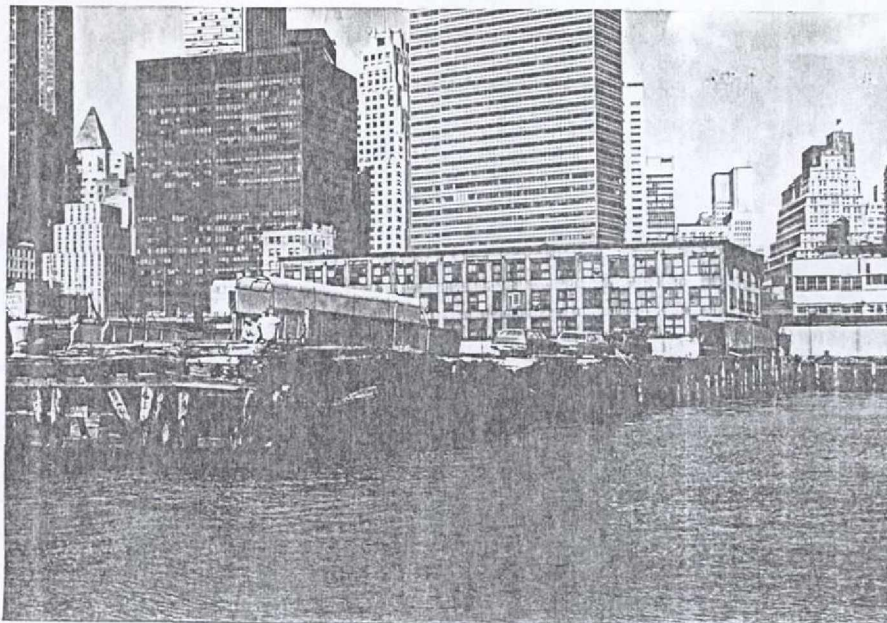


Plate 7. It is proposed to remove Pier #18, shown in this photograph with the Fulton Street Fish Market Building behind it. The structure is not historic, and no cultural resources would be adversely affected by its removal. (ER3, X20a, looking W)

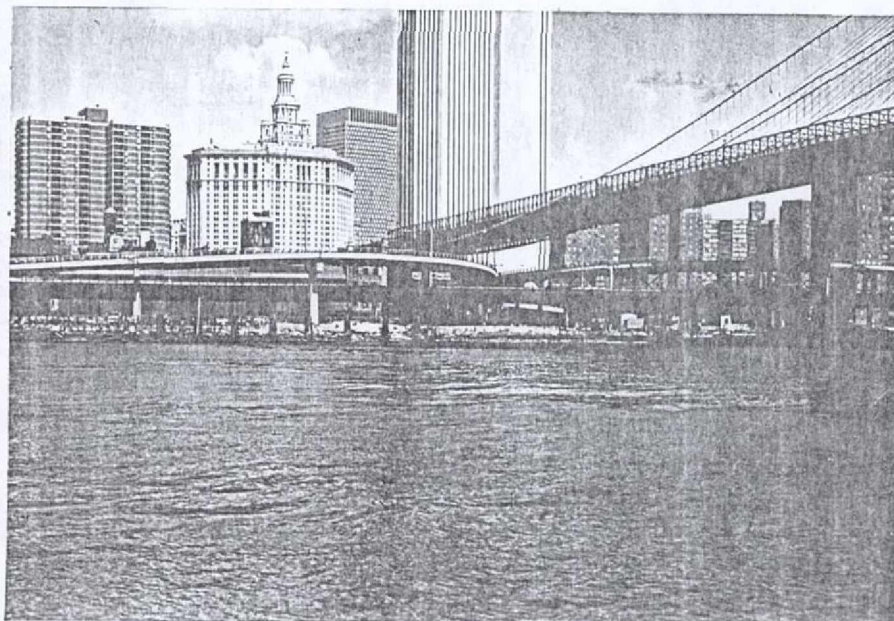


Plate 8. Dolphins, and rubble behind them, just south of the Manhattan end of the Brooklyn Bridge, will be removed by this project. This was the general area where Peck's Slip projected west, but that was filled by 1817. The present material, which is east of the elevated highway and of South Street, is not historic and removal will not affect any cultural resources. (ER2, X4, looking NW)

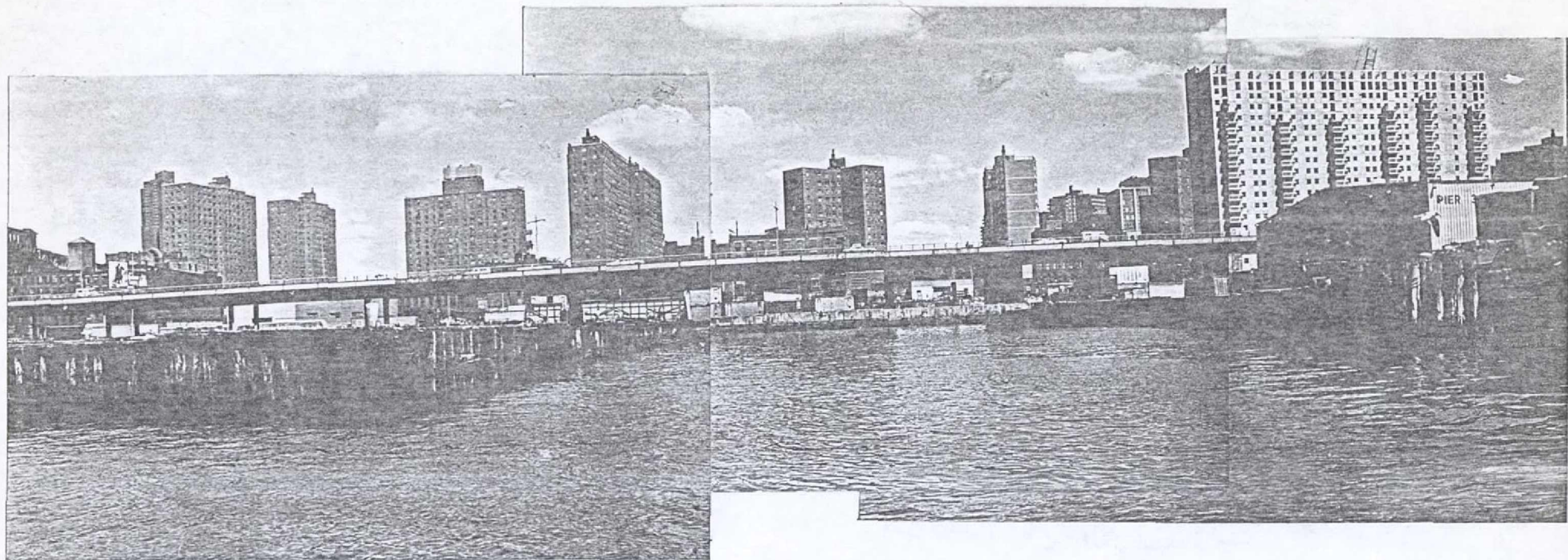


Plate 9. Composite view of East River Waterfront just north of the Manhattan Bridge. The decaying structure to the left is Pier #34, which would be removed, as would pilings against the waterfront directly opposite the camera. To the right is Pier #35, which would be repaired. These actions will not affect any cultural resources. Rutgers Slip once existed west of Pier #34, but the project will have no impact on that area. (ER2, X 7,6,&5, looking NxNW, N, & NxNE)

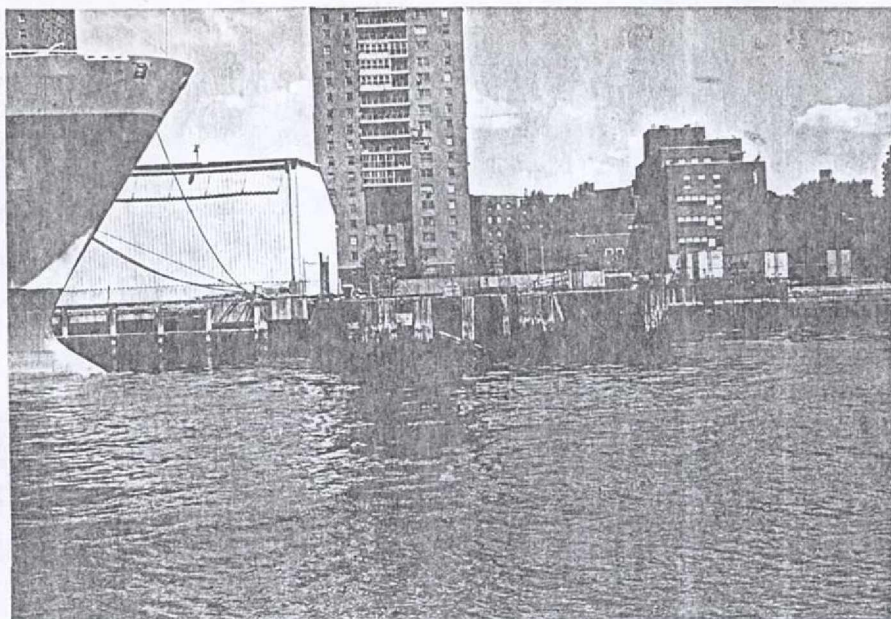


Plate 10. View of rotted pilings of Pier #44, which would be removed. They have no historic value. (ER2, X8, looking NE)

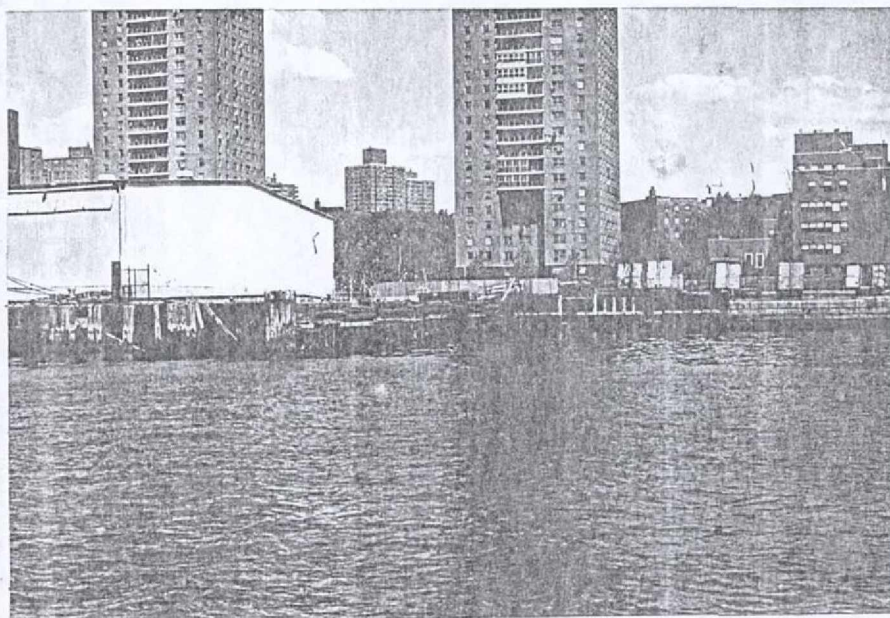


Plate 11. Another view of Pier #44, showing the concrete sea-wall at the waterfront. Similar wall starts here and extends for over a mile north, around the periphery of Corlears Hook. The historic promontory is now buried by fill, and does not extend to the present water's edge. (ER2, X9, looking N)

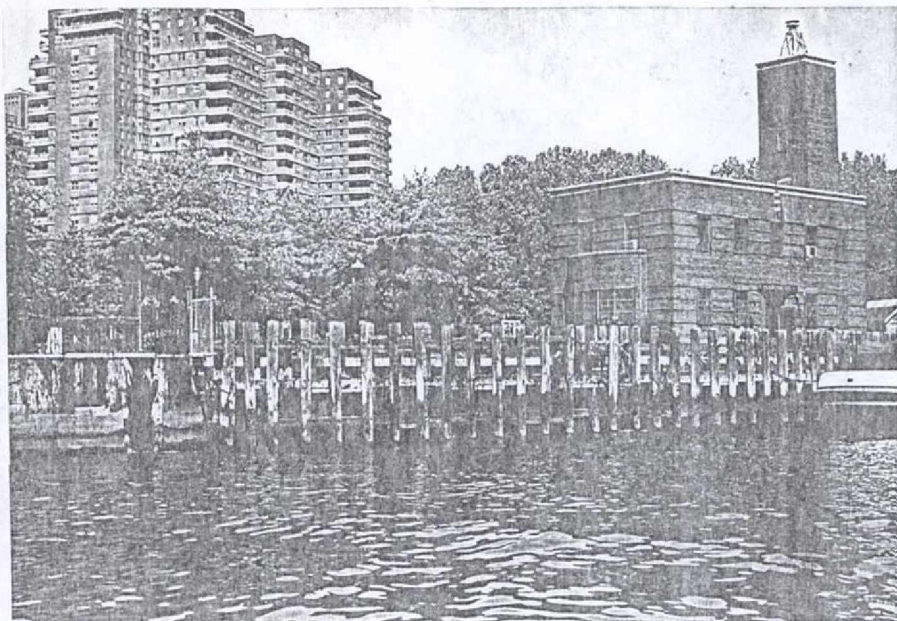


Plate 12. Rotted Pilings which serve as sea-wall protection by Marine Co. 6 station, where a fire-boat is kept. These pilings would be replaced or repaired. Note the breach in the concrete sea-wall to the left. (ER2, X10, looking NW)

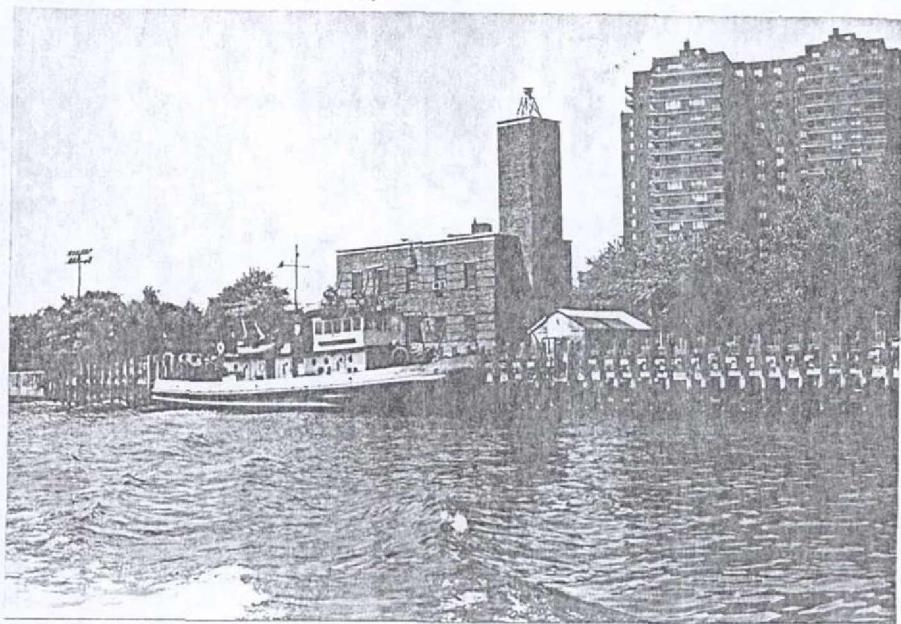


Plate 13. Another view of the Marine Co. 6 station, with Fierboat No.5, the Senator Robert F. Wagner, tied up. This is at the projecting point of Corlears Hook, just south of the Williamsburg Bridge. (ER2, X13, looking WxSW)

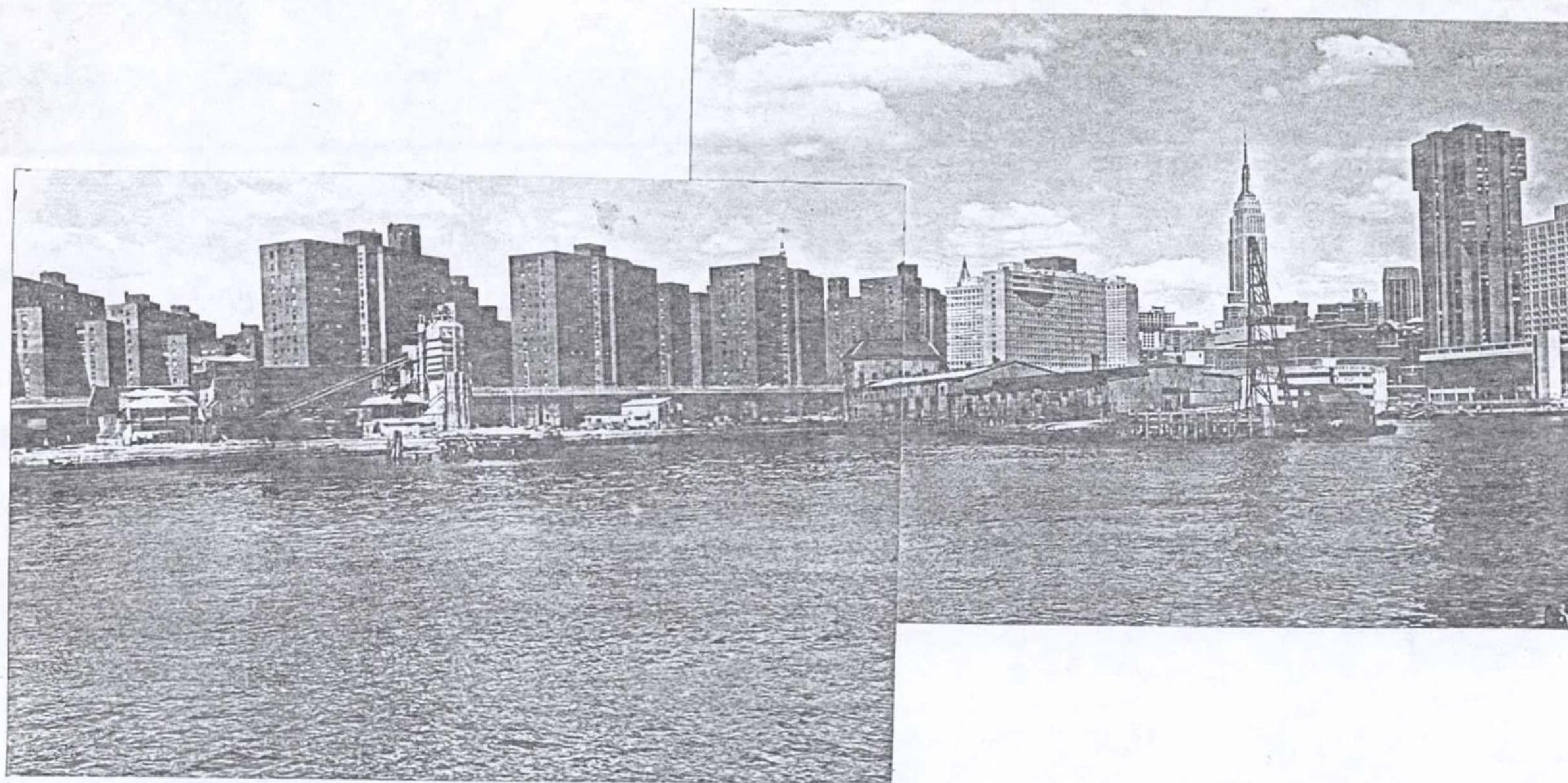


Plate 14. Composite view of Pier #69 and Pier #70 between the ends of East 20th and East 23rd Streets (by the Peter Cooper Village). Pier #69 is the low decayed structure to the left, projecting directly toward the camera from the gravel plant. It would be removed. Pier #70 with the Mansard roofed building facing on Marginal Street, would be repaired. No historic resources will be affected by these actions. (ER2, X15&14, looking NW)

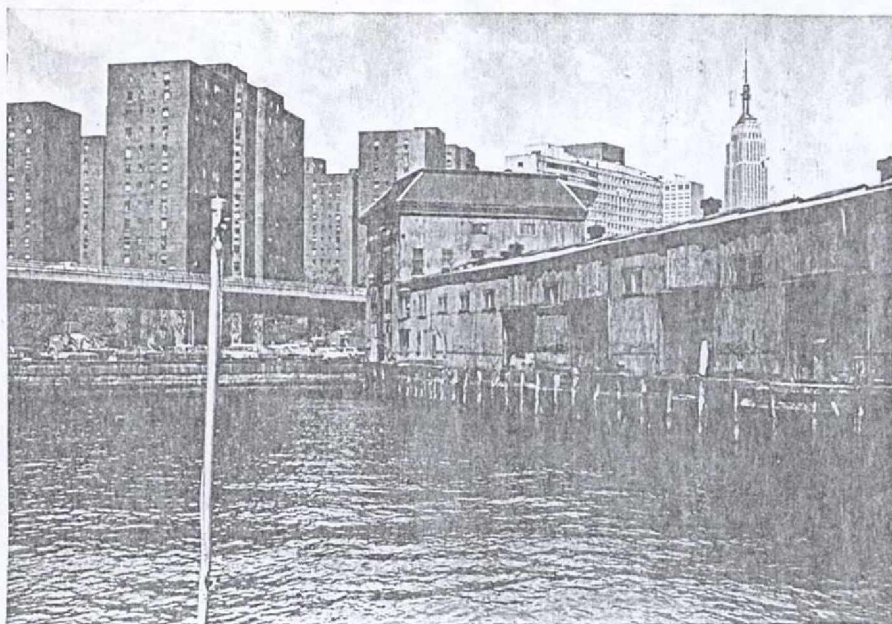


Plate 15. A close view of Pier #70 and the street front structure. (ER2, X16, looking NW)

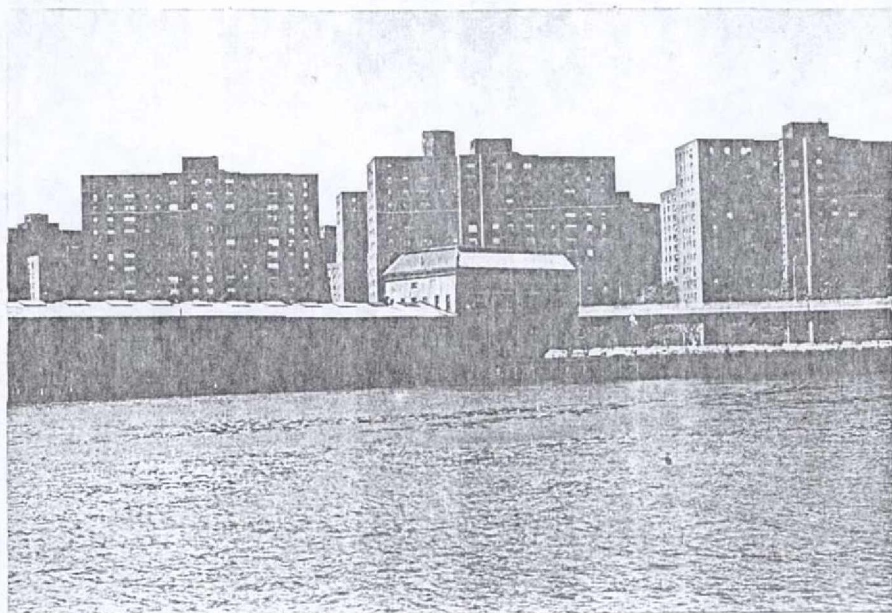


Plate 16. The northeast (upriver) face of Pier #70 and the mansard-roofed building are shown here. It has been reported that repair of this pier would not result in destruction or removal of the building. (ER2, X18, looking SW)

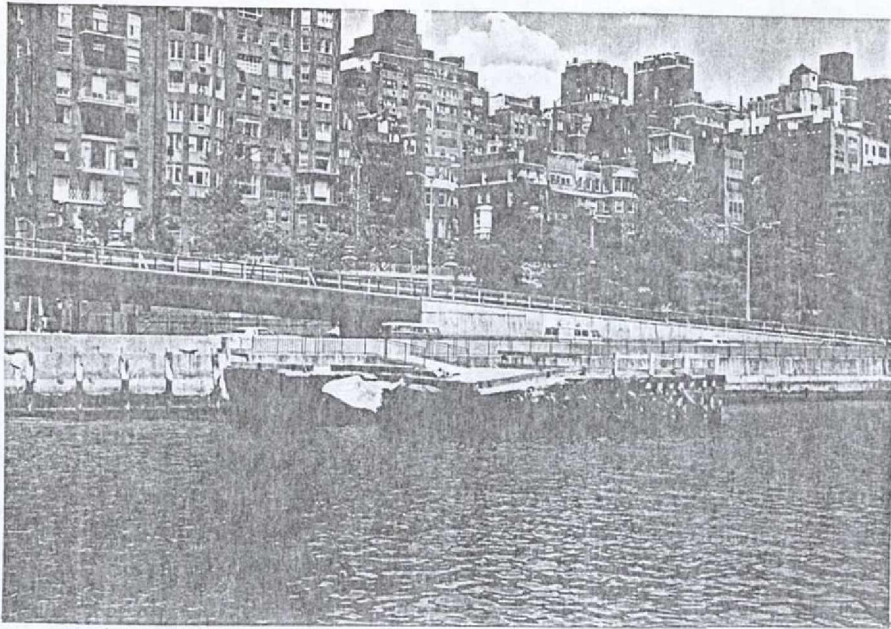


Plate 17. A small structure on the East River, at about East 49th Street. It is proposed that this small, 20th century structure be removed. It is of no historic value, and the historic Turtle Bay area, now the United Nations, is several blocks south and west, so it will not be affected. (ER2, X19, looking NW)

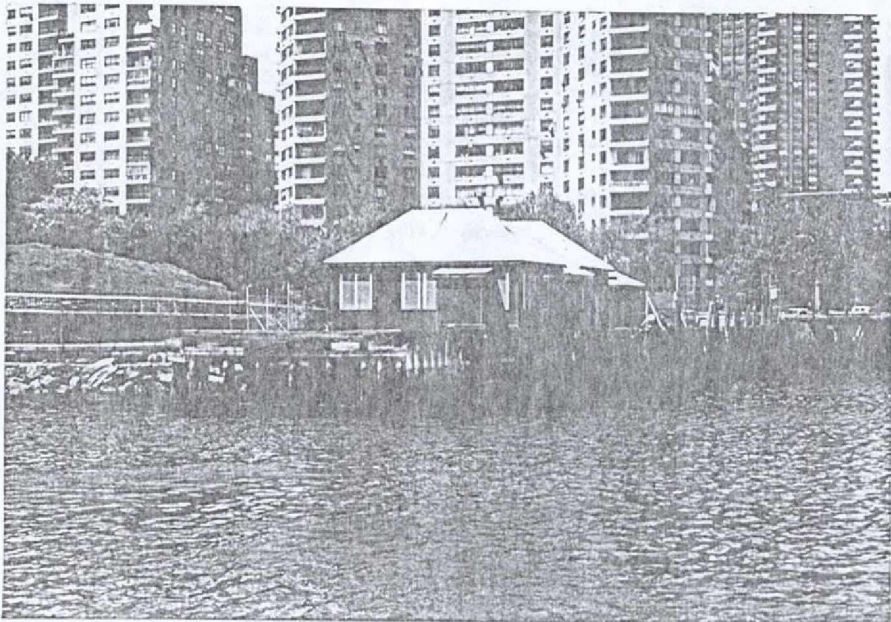


Plate 18. There will be no effect on this small structure (Item No.57) at the north end of Carl Schurz Park, opposite 90th Street. This marks the upper limit of the project. Historic Gracie Mansion, which has been the Mayoral Residence since 1942, is at the top of the hill to the left, but the project will not affect any cultural resources in this area. (ER2, X20, looking W)

E. Alterations During the Historic Period

Previous discussion has already indicated that a tremendous amount of land filling has occurred within the study area, and, in fact, in most of the heavily urbanized parts of New York Harbor. There are a number of places where rocky head-lands projected into the water, where the shoreline is still where it was several centuries ago, but on the East River Reach there are only two points like this, at the ends of 55th and 58th Streets.

The process has been one of building a waterfront by placing fill material behind some sort of sea-wall, to obtain a situation where ships could moor and load or unload against the sea-wall, dockside, or whatever vertical face was created. The repetition of this process has created a higher wall, further into the harbor, with each successive stage, and a consistently high demand for real estate has coupled with this to make the creation of real estate a continuous and profitable means for expanding New York City.

The general stages of land expansion are well documented, but there is not as much information on the actual method of obtaining, transporting, compacting, and retaining fill material at various times. The following maps and illustrations show how the New Amsterdam waterfront along what is now Pearl Street was pushed southeast to Water Street, then to Front Street, and finally to South Street, which was reached and consolidated before 1820. South of Corlears Hook there has been

only minor change to the shore-line, such as construction and removal of piers, since that time. North of that, the process has continued into the mid-20th century, with construction of elevated or depressed roadways, public parks, and the United Nations complex. Several of the maps, such as the detailed map of Manhattan made by Egbert L. Viele in 1865, represent attempts to show the original shore line, with "made land" extending beyond it. The last map in the series, and the profile along the line of Wall Street which follows it, sum up the process. Although they are extremely schematic, and purport to show future land making activities, these two drawings graphically represent the way in which the shoreline has consistently been expanded, and also prove that the pressure to continue the process still exists.

The process of making land was not always popular, and has created numerous problems. In July, 1796, for example, it was believed that filth in fill material was causing sickness, and "the Common Council passed four ordinances for filling up sunken lots on South Street" (McKay 1969: 19). Some of the last areas to be filled were the "Slips" or indentations into the shoreline which were used for ship docking before long projecting piers became common. Beekman Slip was filled after 1775 (Waite & Huey 1972:4), but Old Slip and Coenties Slip were still open in 1807, and Peck Slip until 1817 (Rosebrook 1974: 10, 41).

When the slips were filled, the material sometimes washed out, and the operation had to be repeated. This happened at Beekman Slip (now Fulton St.) in the early 19th century, when Mr. Codwise, owner of a "water lot" on what is now John St., complained that he could not fill

up his ground until Mr. Schermerhorn fills his, which Mr. Schermerhorn will not do until the [Beekman Slip] bulkhead is sunk as it will be washed into the river..." (21 July 1806, New York City, Minutes of the Common Council, 4: 250, 251).

It is clear from this very brief discussion that the early historic waterfront is set several blocks inland in most places, and cannot be affected by the present project. It is also clear, however, that if there is any disturbance of the fill material behind the present waterfront line, archaeological resources will be involved. Fortunately, the Collection and Removal of Drift Project on the East River Reach does not include any such action.

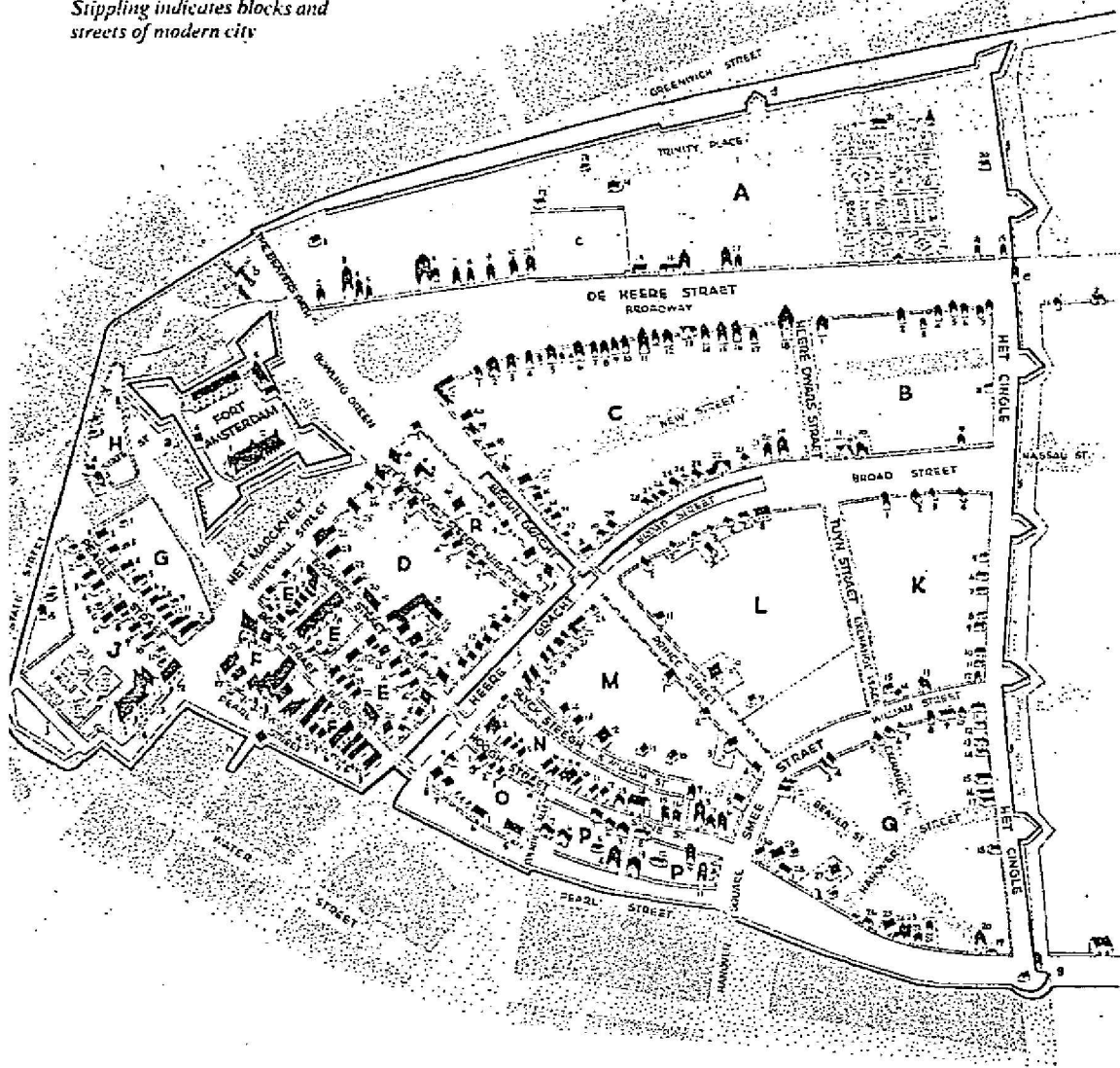
There remains the consideration of whether any major cultural resources might exist adjacent to the present sea-wall. With this possibility in mind, we investigated several well known sinkings. On 27 December 1853 a fire swept the area near what is now the west end of the Brooklyn Bridge. The Great Republic (launched 4 Oct. 1853), largest sailing ship of her day, was docked at the foot of Dover St. taking on cargo for her maiden voyage to Liverpool. She burned to the water, her masts and rigging setting fire to the Joseph Walker (Launched 1850) and the White Squall (launched 1850) which also burned. The Great Republic was raised and rebuilt and eventually the other wrecks were removed, after considerable litigation. (Cutler 1961: 320, 323-24, 344, 355-56, 382). Evidently the pressure for usable dockspace was such that the waterfront could not be left idle for long because of sunken hulks. Our research did not produce any other indication of events which might have left sunken cultural resources.

There is evidence of a considerable amount of dredging, so that even if cultural resources related to historic shipping ever did exist, there is a high probability that they would have been removed or seriously disturbed. Tabulated data available from the New York Office of the Corps of Engineers goes back only to 1929. Between that year and 1976 at least eighty dredging and obstruction removal projects were approved and implemented, and subsequent to compilation of that list there was dredging of the space around and between the South Street Seaport Piers, in anticipation of Bi-centennial activities.

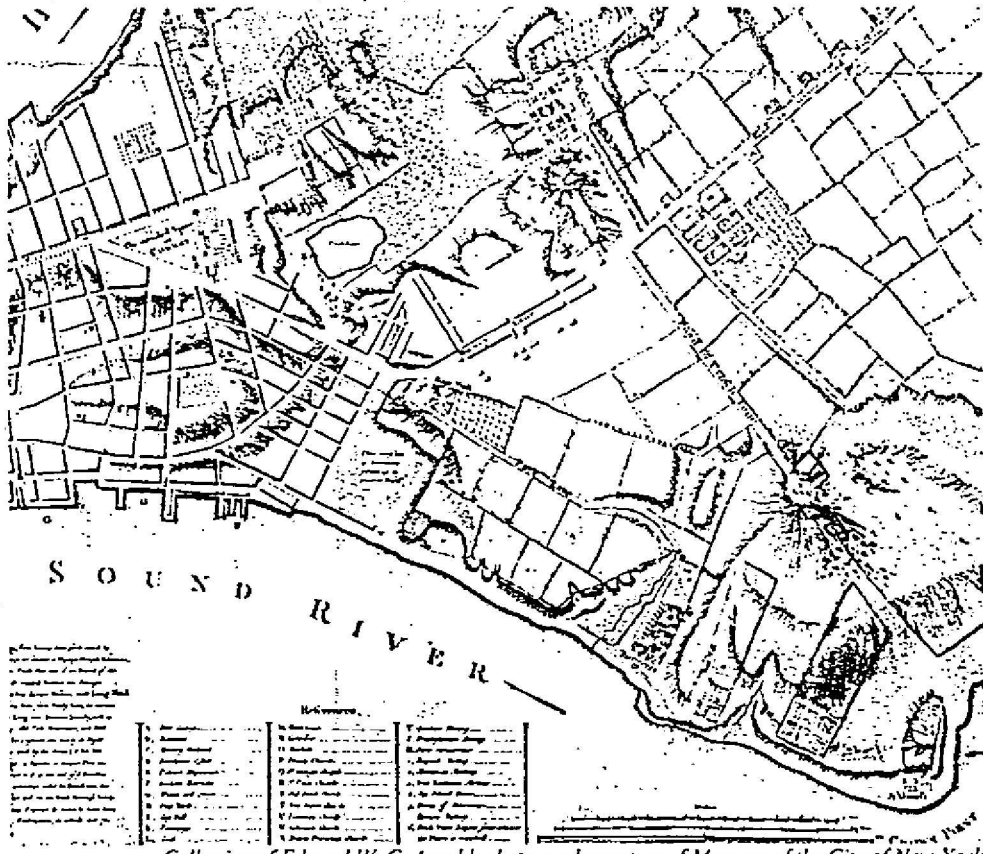
Before 1929 there must also have been a substantial number of dredging operations, not recorded on this list. While the majority of these recorded actions have involved the main channel, which has been maintained at between 30 and 40 ft. depth, there have been a number along the waterfront, like March-April 1930 work at the Fulton Ferry Reef, costing \$ 11,489. The 1928 Pier Map (see Appendix) indicates a similar degree of use along most of the East River waterfront of Manhattan in the early 20th century, subsequent to which many piers have been removed. Such continuous maintenance of channel and pier depths up to at least half a century ago, and up to last year near the South Street Seaport, would have ensured that 18th or 19th century "midden" deposits will not have survived intact. The chances of finding archaeological remains of ships and ship-related deposits is so slight that without documentary evidence, it is impossible to predict.

(Kouwenhoven 1953:41)

Drawn for this book by Signan-Wurd, New York City
Stippling indicates blocks and
streets of modern city



Schematic diagram of 1660 "Castello Plan" of New Amsterdam. This shows graphically the mid-17th Century East River waterfront along what is now Pearl Street, in lower Manhattan.



Collection of Edward W. C. Arnold; photograph courtesy of Museum of the City of New York

Stokes Collection, New York Public Library



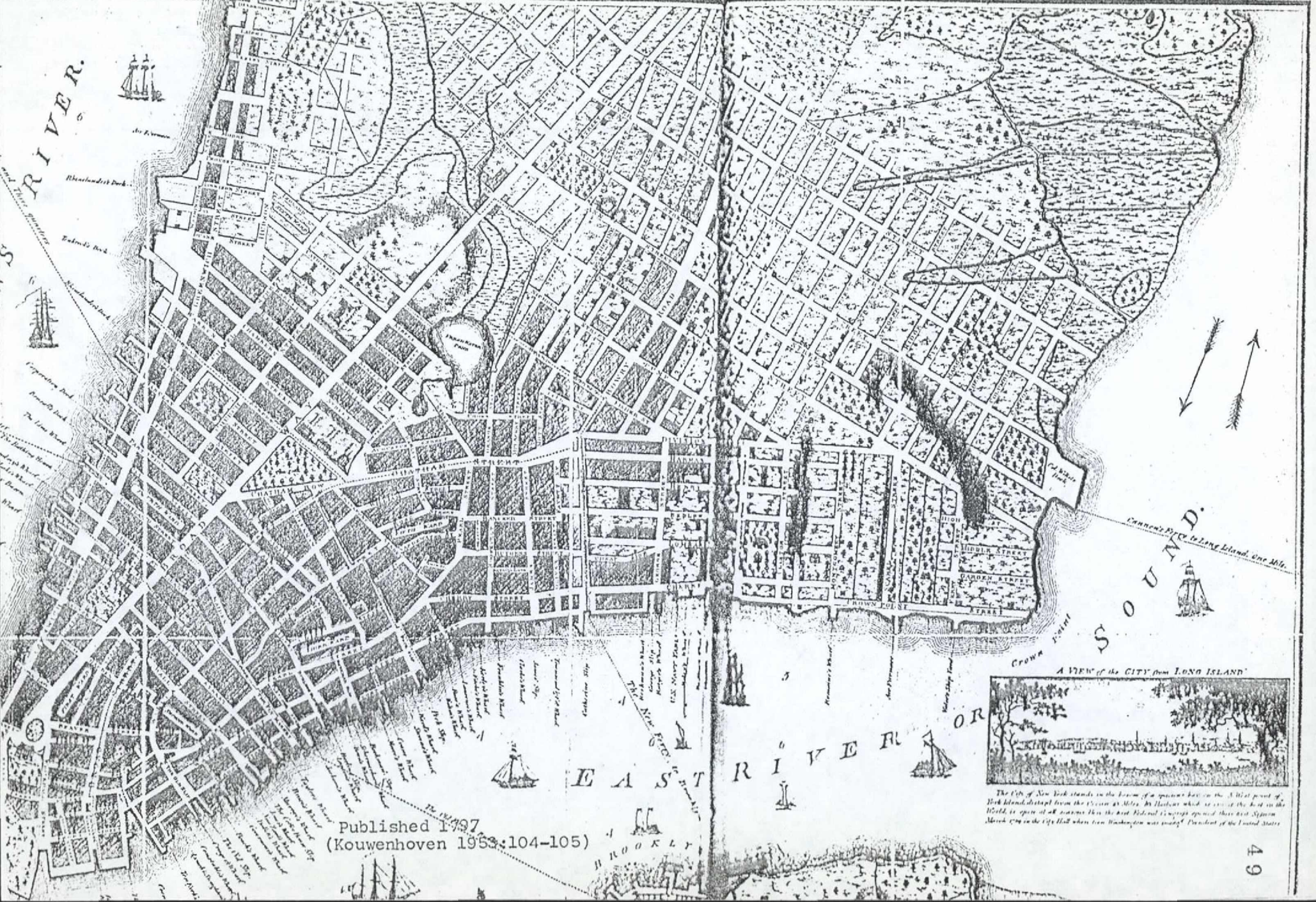
Comparison of Montresor's 1765-66 map (top) and Bernard Ratzer's 1767 map (bottom) showing rapid development of land along the south side of Corlears Hook during that period.



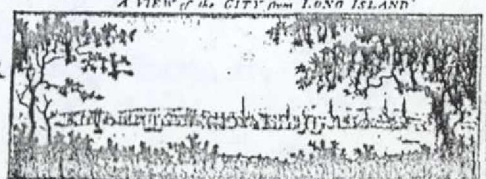
Shaded area of map depicts the havoc wrought by the great fire of September 21, 1776, which destroyed one-third of the city.

(McKay 1969 : 14)

PLAN of the CITY of NEW YORK in the State of NEW YORK in NORTH AMERICA. Published in 1797



Published 1797
(Kouwenhoven 1953:104-105)



The City of New York stands in the bow of a spacious bay on the N.W. point of Long Island, distant from the Ocean 4 Miles. Its Harbor which is one of the best in the World, is open at all seasons. Thus the best Natural Advantage of this best Situation. Moved 1794 in the City Hall when then Washington was trading. President of the United States.

By the early 19th Century the waterfront was along South Street, but the sea wall was not as far southeast as it is now, by perhaps fifty feet. This 1846 view shows the narrow width of South Street at that time.

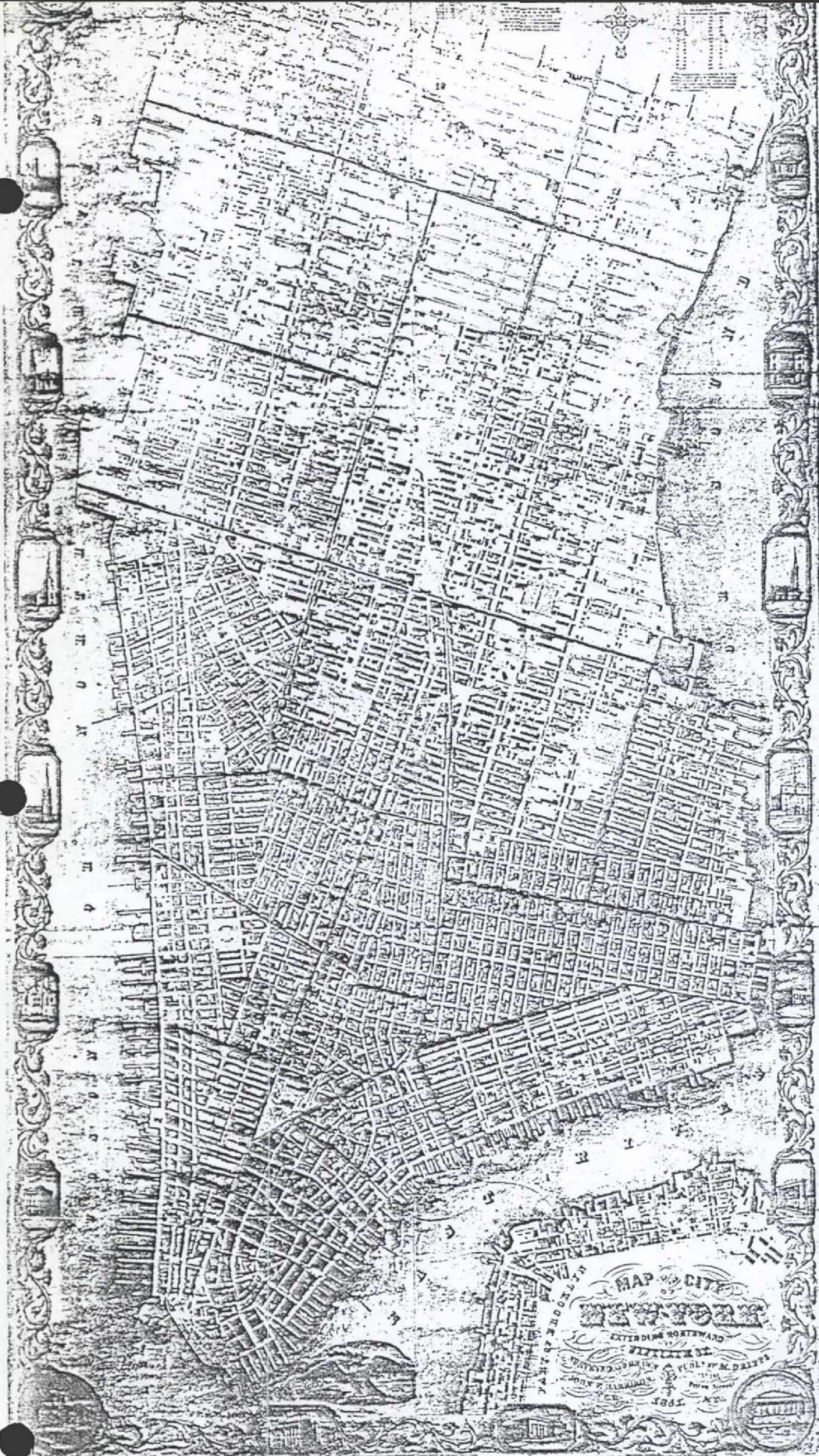
"View of Brooklyn, L.I. from U.S. Hotel, New York," 1846, drawn by and after Edwin Whitefield. Schermerhorn Row block center foreground with Fulton Ferry and Fulton Market at left. Courtesy Eno Collection, Prints Division, New York Public Library, Astor, Lenox, Tilden Foundation.



DRAWN FROM NATURE & ON STONE BY E. WHITEFIELD

VIEW OF BROOKLYN, L. I.

FROM U. S. HOTEL, NEW YORK.



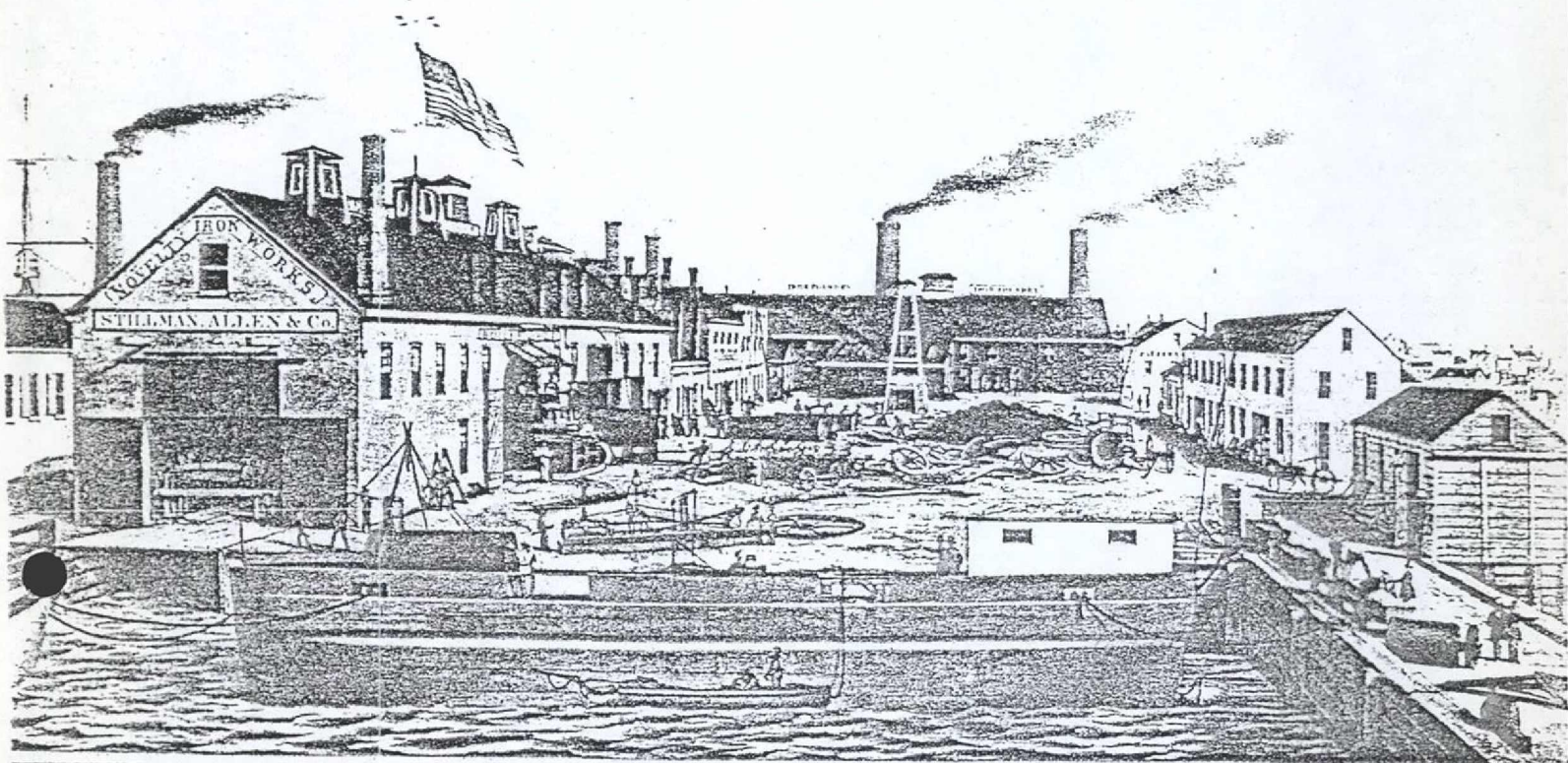
This 1850 map shows how the waterfront consisted of an almost continuous set of piers along the East River around Corlears Hook; but was largely undeveloped north of that. This mid-19th Century shoreline has been buried under the public housing and park now on Corlears Hook.

(Kouwenhoven 1953:188)
The so-called Dripps map of New York in 1850 gives a clear idea, even in this greatly reduced reproduction, of the extent to which the city had been built up at mid-century.

Entitled "Map of the City of New York Extending Northward to Fiftieth Street," it was surveyed and drawn by John F. Harrison, lithographed and printed by Kollner, Camp & Co., and published by M. Dripps in 1851.

This and a companion map of Manhattan north of Fiftieth Street were the first published maps to show in detail all the individual lots and buildings in the city.

Stokes Collection,
New York Public Library



NOVELTY IRON WORKS, FOOT OF 12th ST. E. R. NEW YORK.

*Novelty Iron Works and Engine Works, Novel Mills, Novel Iron Works, Novel
Improved Steam Engines and Propellers, Novel Iron Works.*

STILLMAN, ALLEN & Co.
Iron Founders, Steam Engine and General Machinery Manufacturers.

*Novelty Iron Works, Novel Mills, Novel Iron Works and
Improved Steam Engines and Propellers, Novel Iron Works.*

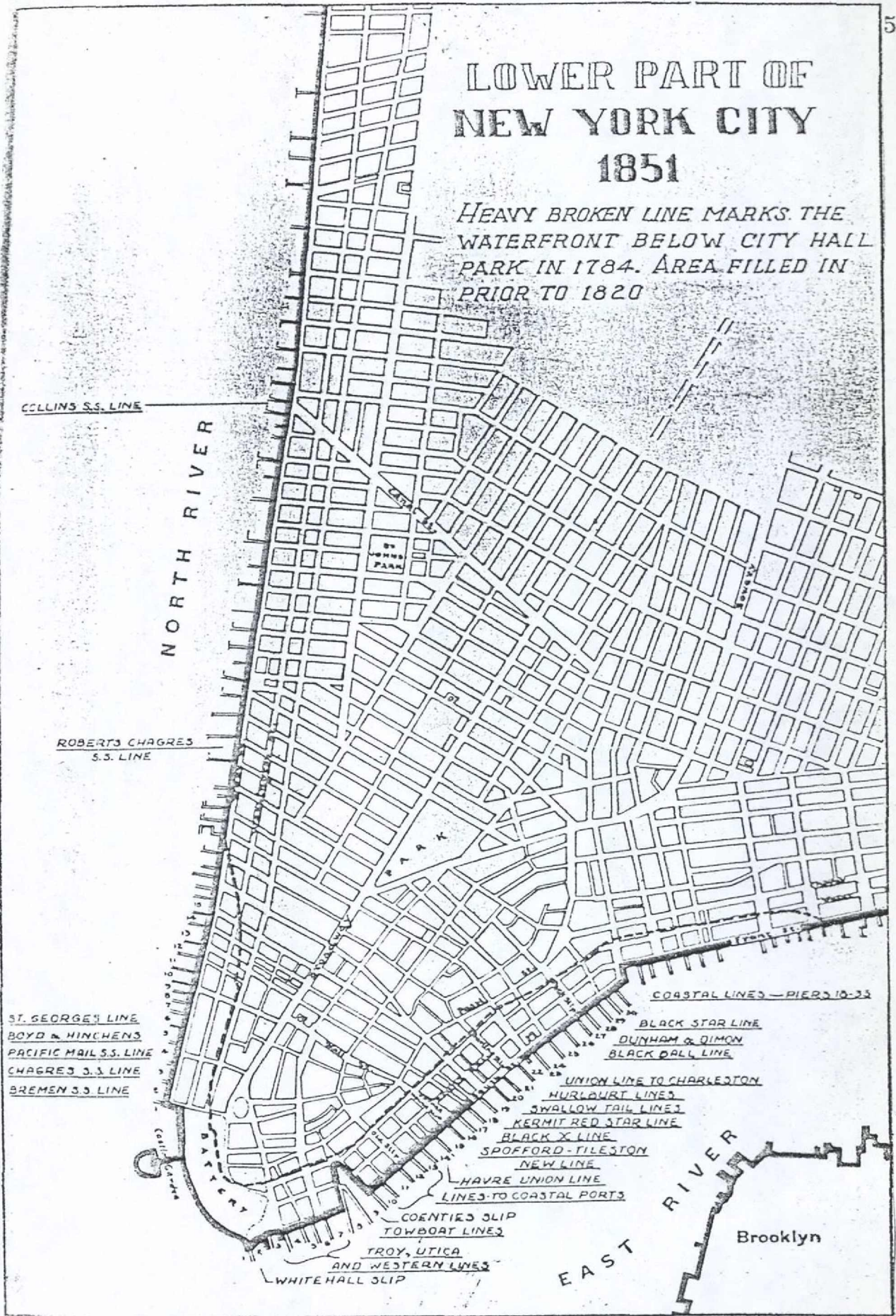
Collection of Edward W. C. Arnold; photograph courtesy of Museum of the City of New York

(Kouwenhoven 1953: 205)

Lithographed advertisement for Novelty Iron Works, ca. 1850. The waterfront shown was at the foot of 12th St. on the East River, which in 1850 was about on what is now Avenue D, one block NW of the present waterfront. Typical Log-Crib and earth fill piers are shown.

LOWER PART OF NEW YORK CITY 1851

HEAVY BROKEN LINE MARKS THE
WATERFRONT BELOW CITY HALL
PARK IN 1784. AREA FILLED IN
PRIOR TO 1820



COLLINS S.S. LINE

NORTH RIVER

ROBERTS CHAGRES
S.S. LINE

ST. GEORGE'S LINE
BOYD & HINCHEMS
PACIFIC MAIL S.S. LINE
CHAGRES S.S. LINE
BREMEN S.S. LINE

COASTAL LINES - PIERS 10-33

BLACK STAR LINE
DUNHAM & OLMON
BLACK BALL LINE

UNION LINE TO CHARLESTON
HURLBURT LINES
SWALLOW TAIL LINES
KERMIT RED STAR LINE
BLACK X LINE
SPOFFORD-TILESTON
NEW LINE
HAVRE UNION LINE
LINES TO COASTAL PORTS

COENTIES SLIP
TOWBOAT LINES

TROY, UTICA
AND WESTERN LINES
WHITE HALL SLIP

EAST RIVER

Brooklyn

(Cutter 1961)



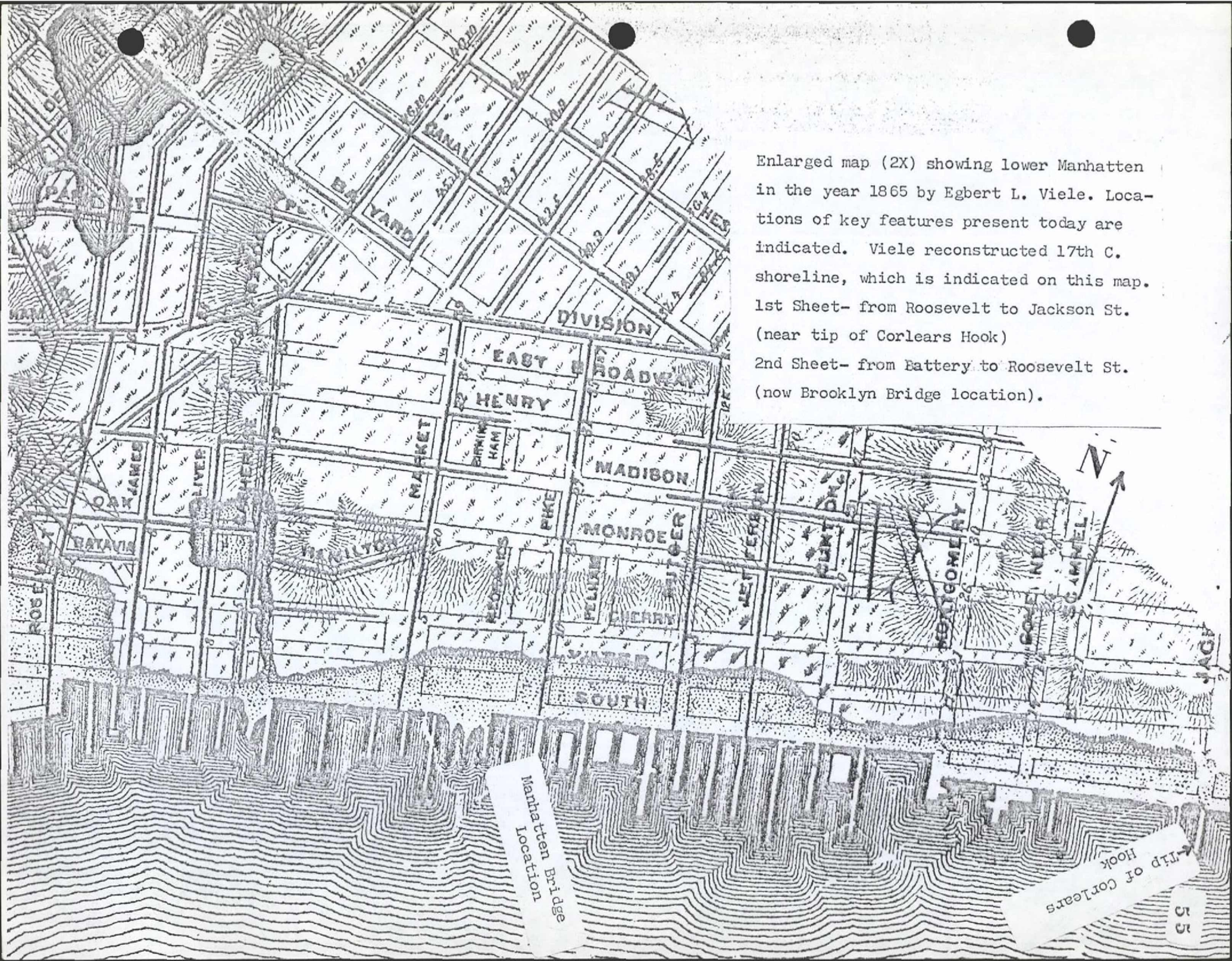
CORLEARS HOOK

DECK SLEEP FERRY

FULTON FERRY

WALL ST. FERRY

NEW YORK CITY IN 1856
Reproduced in 1975 by HISTORIC URBAN PLANS, Ithaca, New York
from a lithograph in the Library of Congress, Washington, D.C.

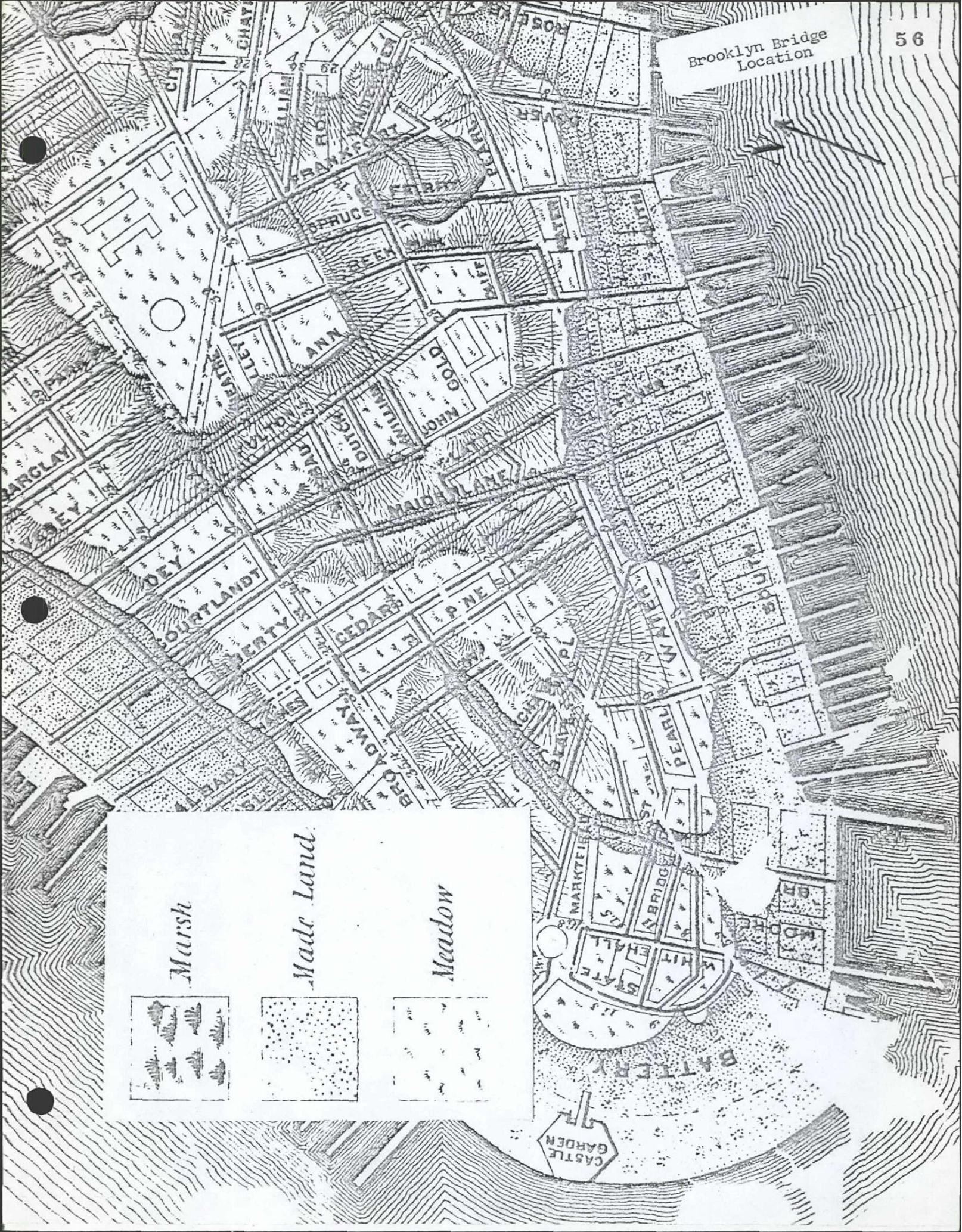


Enlarged map (2X) showing lower Manhattan in the year 1865 by Egbert L. Viele. Locations of key features present today are indicated. Viele reconstructed 17th C. shoreline, which is indicated on this map. 1st Sheet- from Roosevelt to Jackson St. (near tip of Corlears Hook) 2nd Sheet- from Battery to Roosevelt St. (now Brooklyn Bridge location).


Manhattan Bridge Location

Tip of Corlears Hook

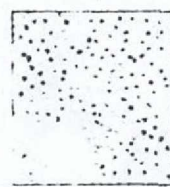
Brooklyn Bridge
Location




Marsh

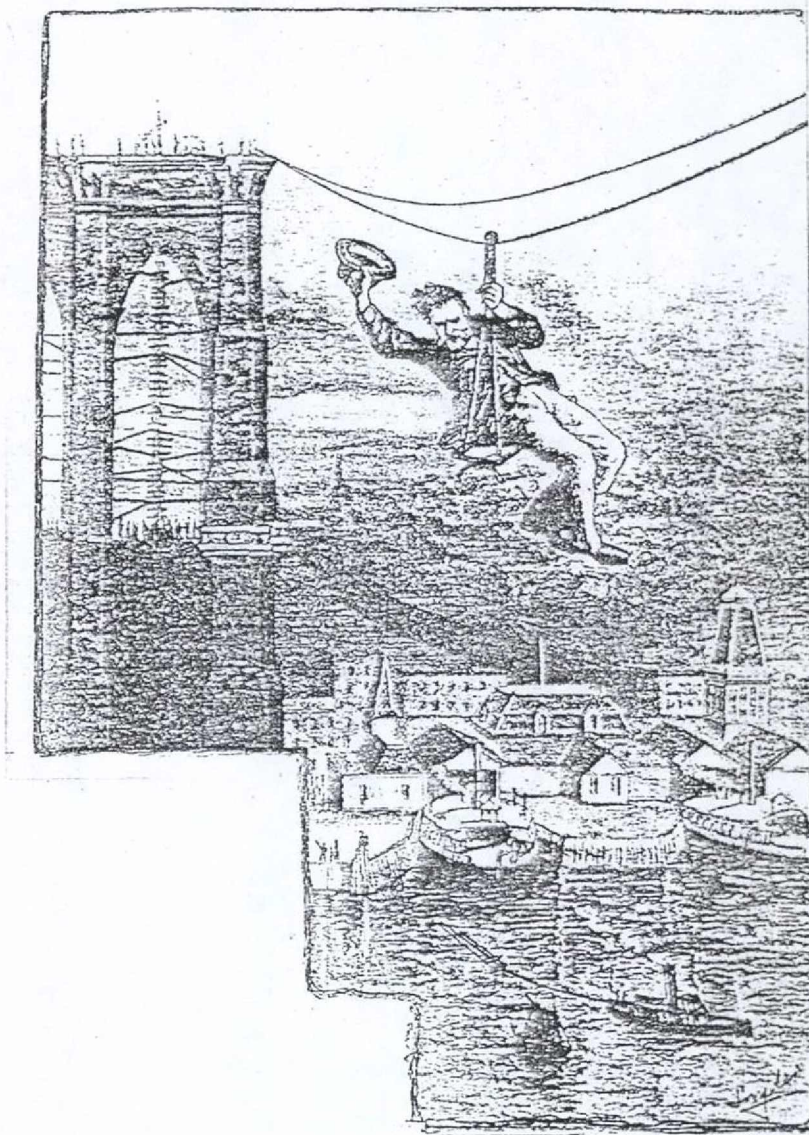


Made Land



Meadow





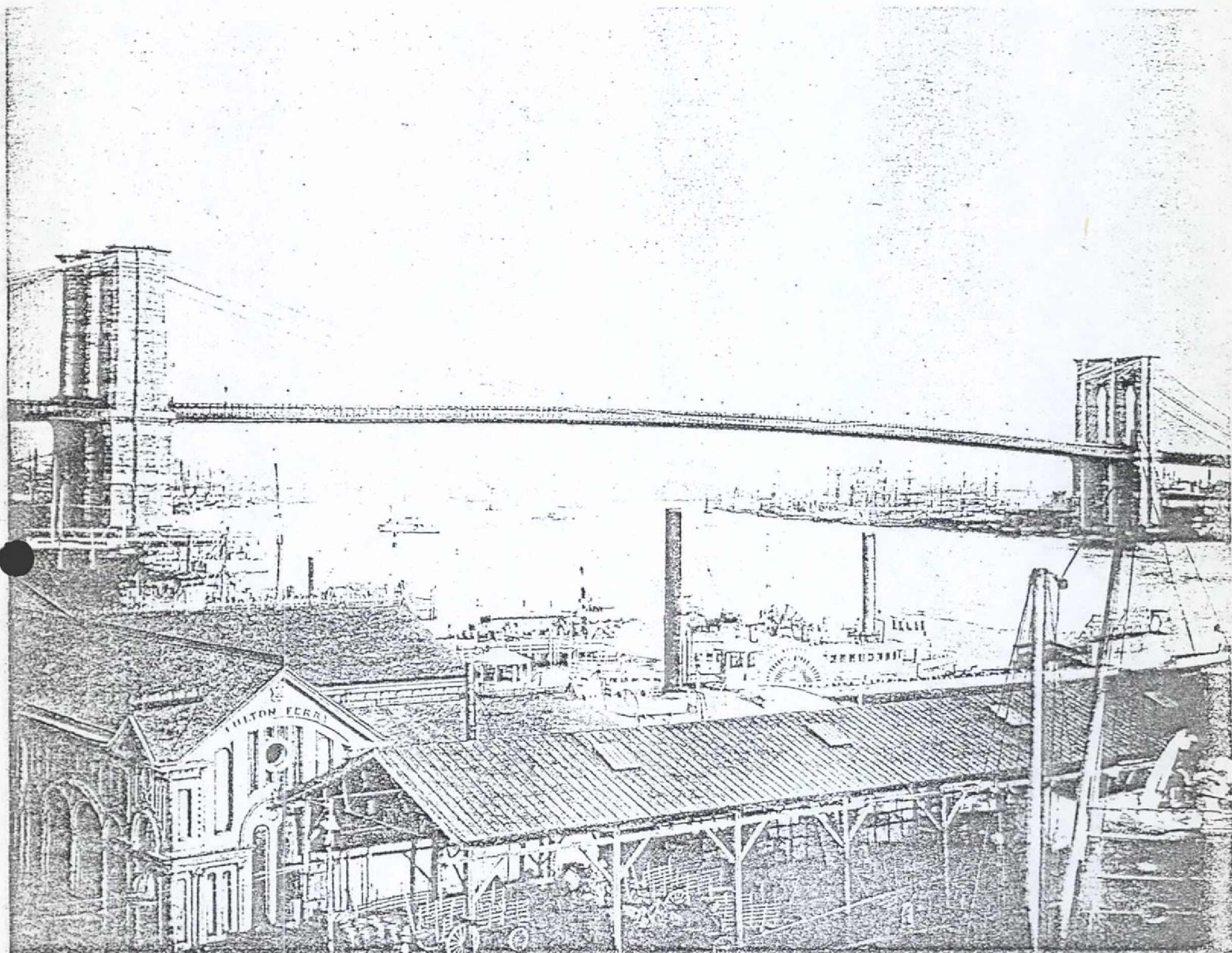
(Kouwenhoven 1953:350)

The wood engraving at right is one of W. P. Snyder's illustrations for W. C. Conant's article on "The Brooklyn Bridge," *Harper's Magazine*, May, 1883. It shows Mr. E. F. Farrington, one of Washington Roebling's chief aides, making the test trip across the East River on the first loop of cable to be strung between the two towers, August 25, 1876.

View from the unfinished Brooklyn Bridge, looking toward the East River waterfront of 1876. The street must be Roosevelt St. Notice the construction of the piers, with earth fill apparently retained by inwardly sloping verticle pilings.

"New York and Brooklyn Bridge." published in 1889 by the Albertype Co.

(Kouwenhoven 1953:391)



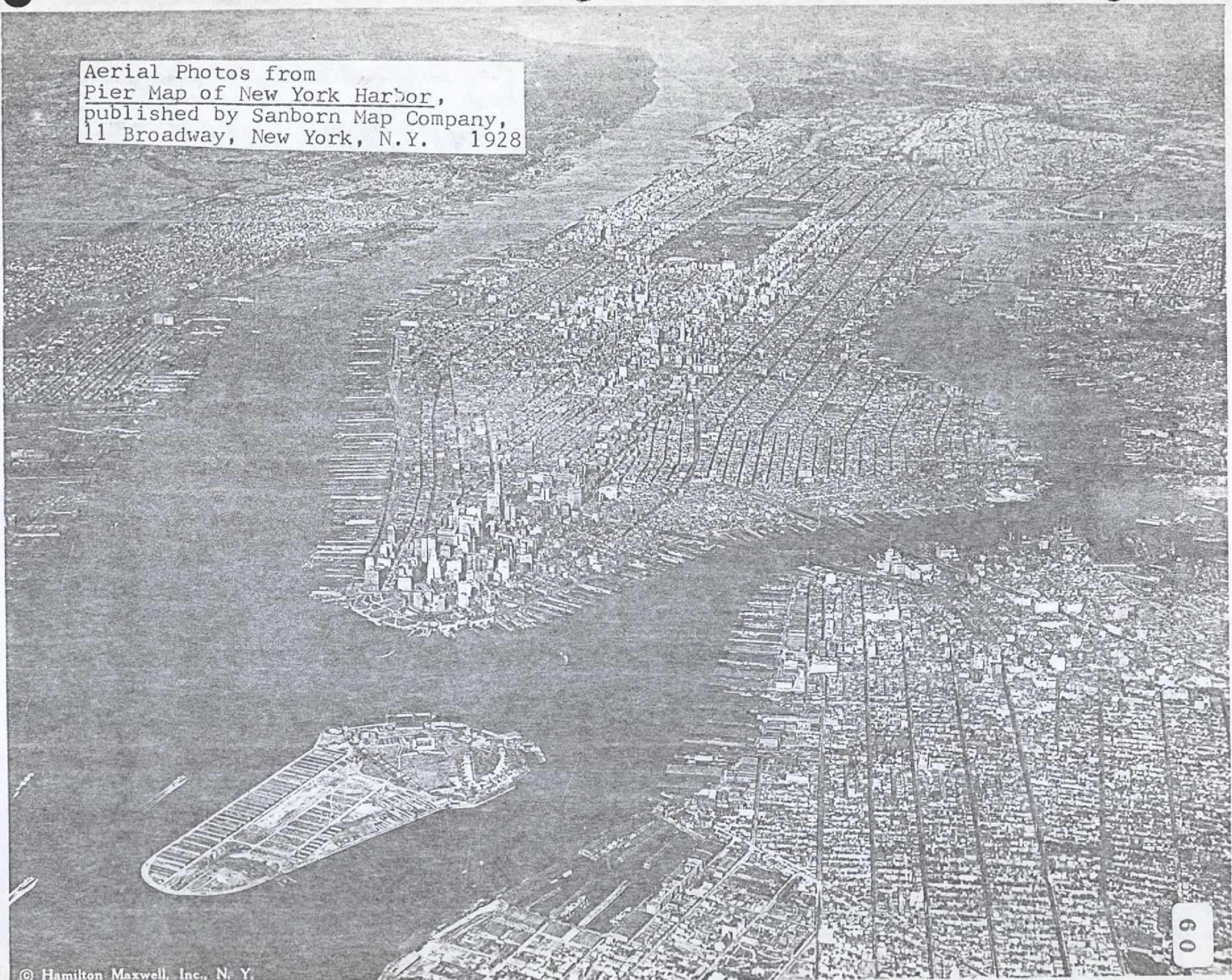
J. Clarence Davies Collection, Museum of the City of New York

This 1889 view, probably taken from the top floor of Schermerhorn Row at 2 Fulton St., shows a typical view of steam side-wheel ferries at the old Fulton Street Ferry Terminal, which was reconstructed in cast-iron in 1863 and operated into the 20th Century. The waterfront here was already essentially in its modern position southeast of South St.

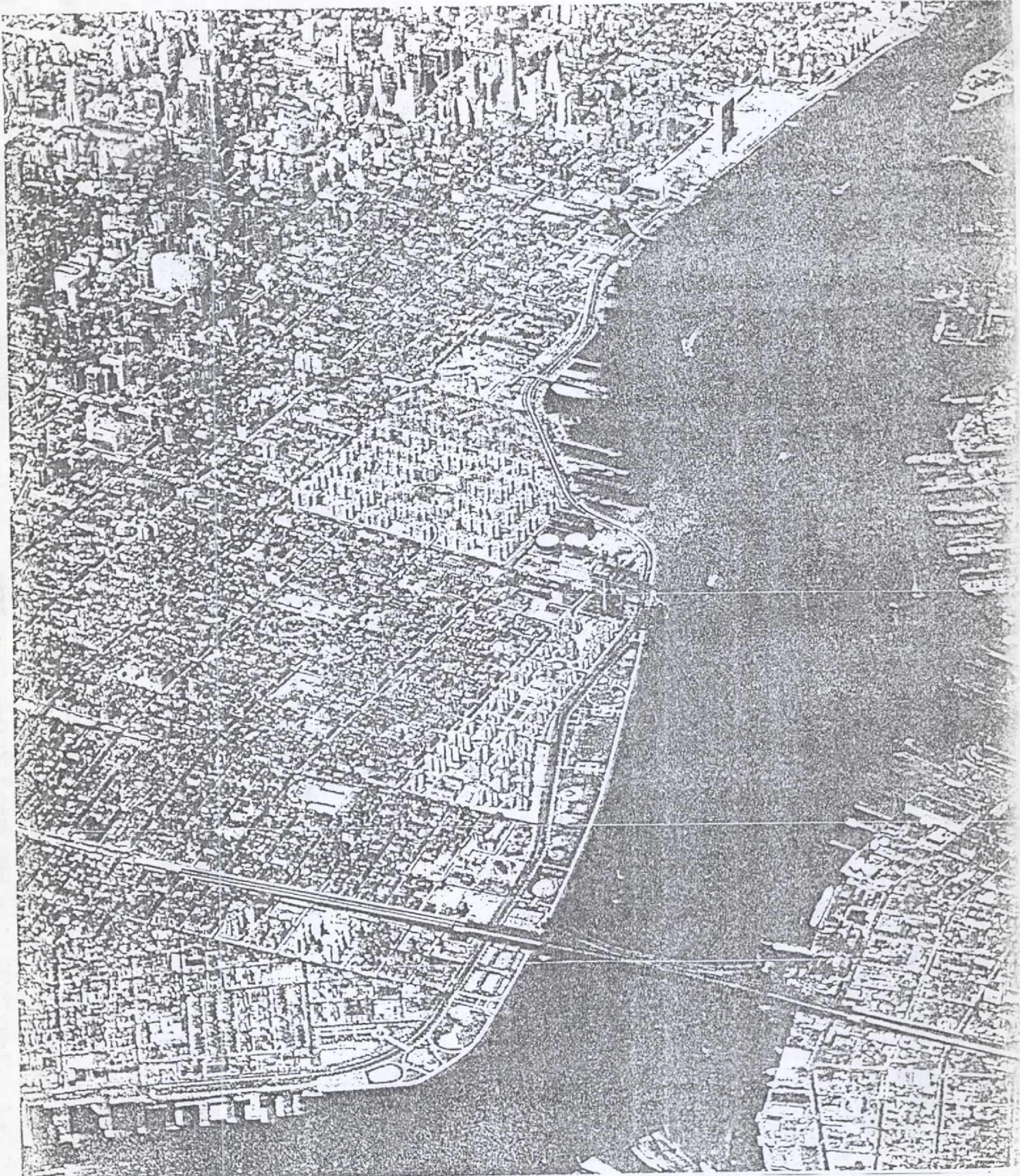


Aerial Photos from
Pier Map of New York Harbor,
published by Sanborn Map Company,
11 Broadway, New York, N.Y. 1928

Aerial Photos from
Pier Map of New York Harbor,
published by Sanborn Map Company,
11 Broadway, New York, N.Y. 1928



LIBRARY



Office of the New York City Construction Coordinator (Kouwenhoven 1953:512)

ca. 1951 oblique aerial photograph showing the East River water front from Corlears Hook (foreground) to the south tip of Welfare (now Roosevelt) Island (at upper right).

4 LOWER MANHATTAN WATERFRONT

- 1650
- ▨ 1776
- ▧ 1850
- ▩ 1973
- 1980

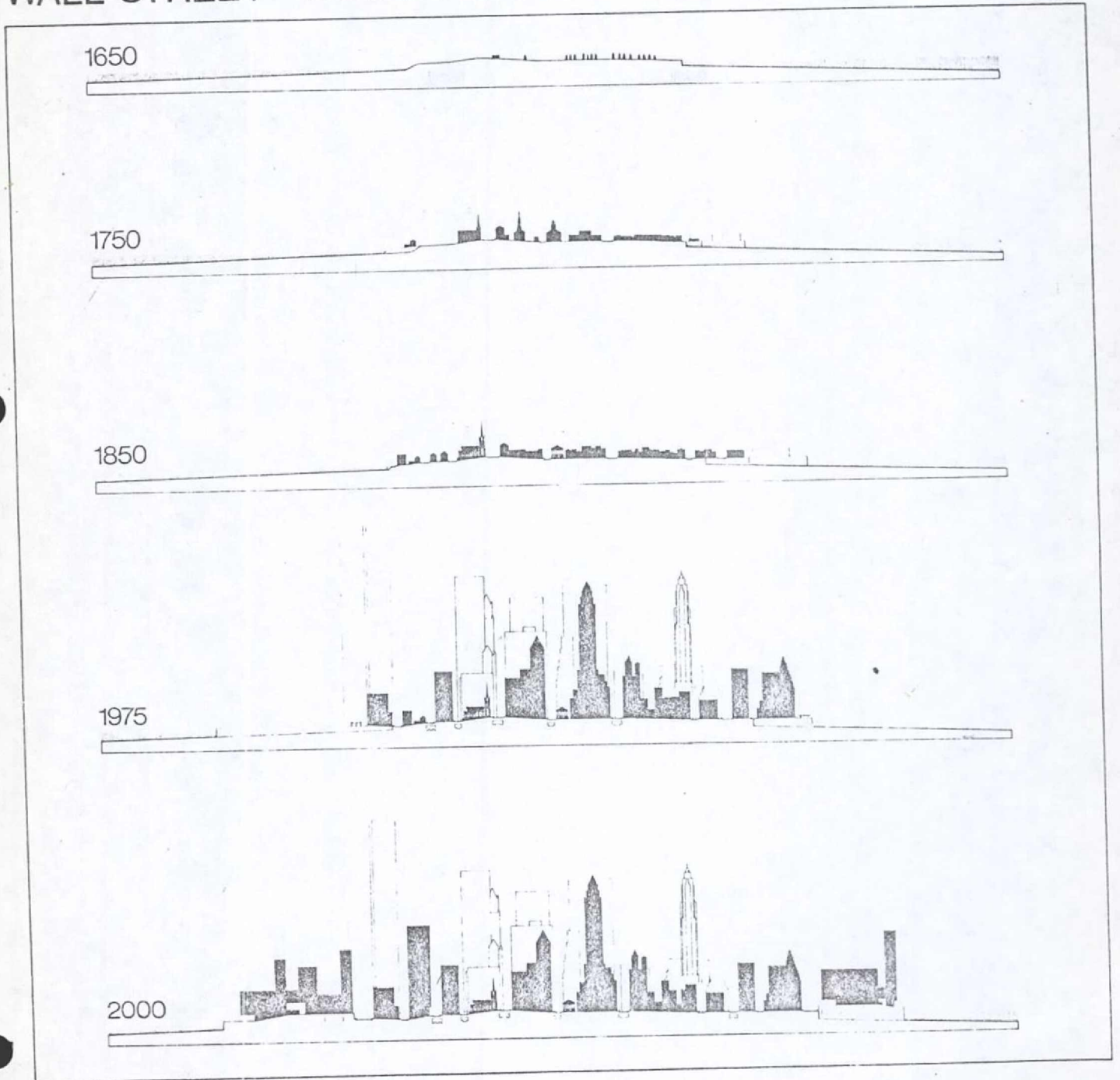
Diagram showing progressive land fill of the Manhattan waterfront. (Baiter 1975: 4)

LANDFILL



Schematic drawing of Wall Street projected to the year 2000. (Baiter 1975: x)

WALL STREET - 1650 TO 2000



IV. Conclusions

We have contacted knowledgeable authorities and concerned maritime historians, and no one has indicated that removal of Pier 18, of Items 25 and 26 (the dolphins, pilings, etc. by the Brooklyn Bridge), and of Piers 34, 44 and 69 will damage any cultural resources. No known prehistoric or historic archaeological sites exist within the Project Area, although archaeological material is present immediately behind the sea-wall throughout most of the project. Removal of Pier 18 will occur within the general area near South Street Seaport, but there is no indication that the pier itself is historic. None of the identified National Historic Sites or Landmarks near the project area will suffer any direct impact or adverse indirect impact. We conclude that the East River Reach portion of the Collection and Removal of Drift Project will not adversely affect any cultural resources found by this study.

It should be noted that the information available to the authors indicated that Pier 70 would be repaired, and that the street-front building at its northwest end would not be affected (Plates 14-16, pp. 40-41). However, if planned repairs on the pier should affect this mansard roofed building, additional study should be made to determine the exact impact, and the status of the building.

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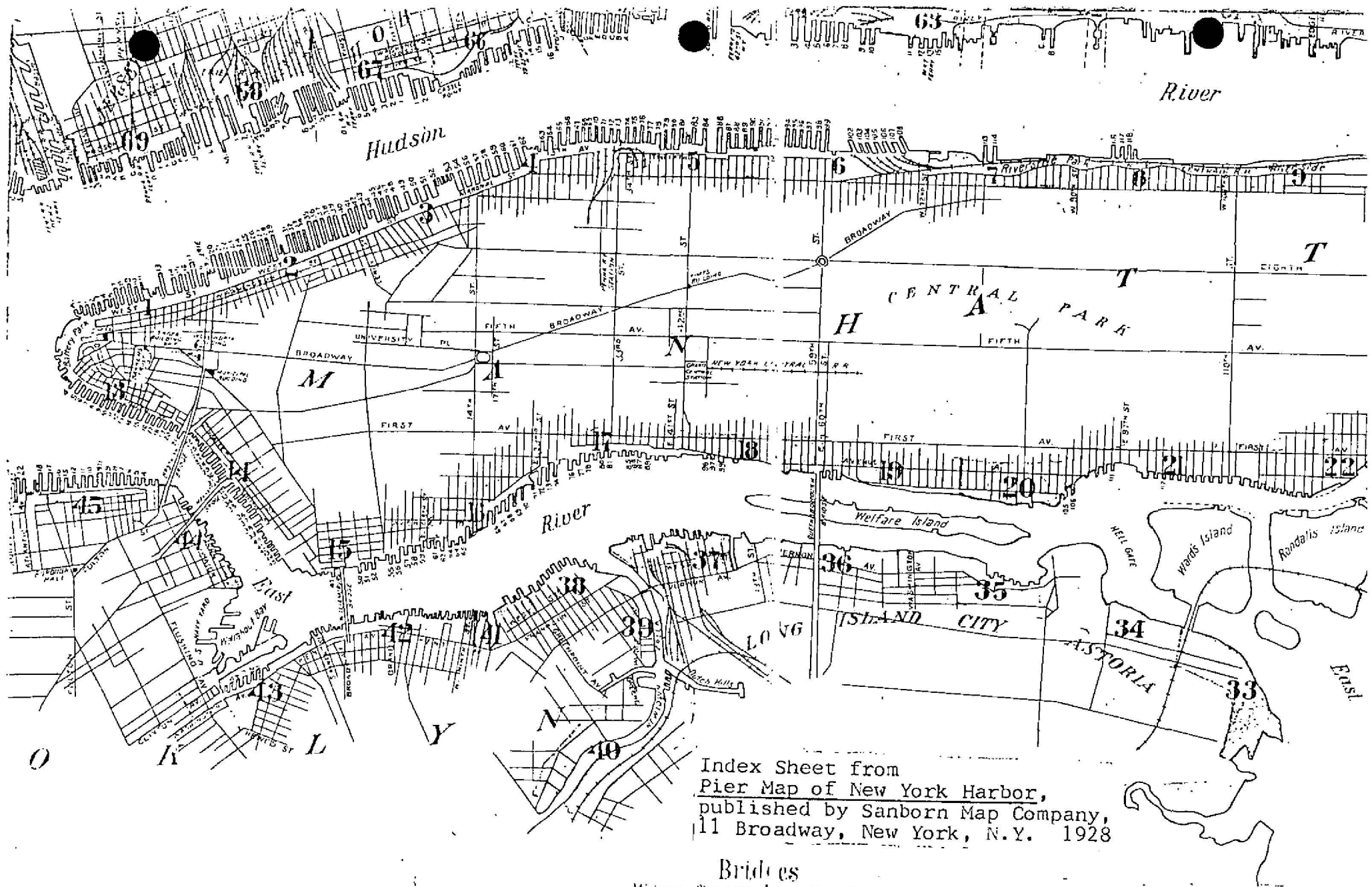
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Appendix

The following are from the indicated pages of Pier Map of New York Harbor, published by Sanborn Map Company, 11 Broadway, New York in 1928. They illustrate the New York waterfront as it was then. Notice that many of the piers present in 1928 are now missing.

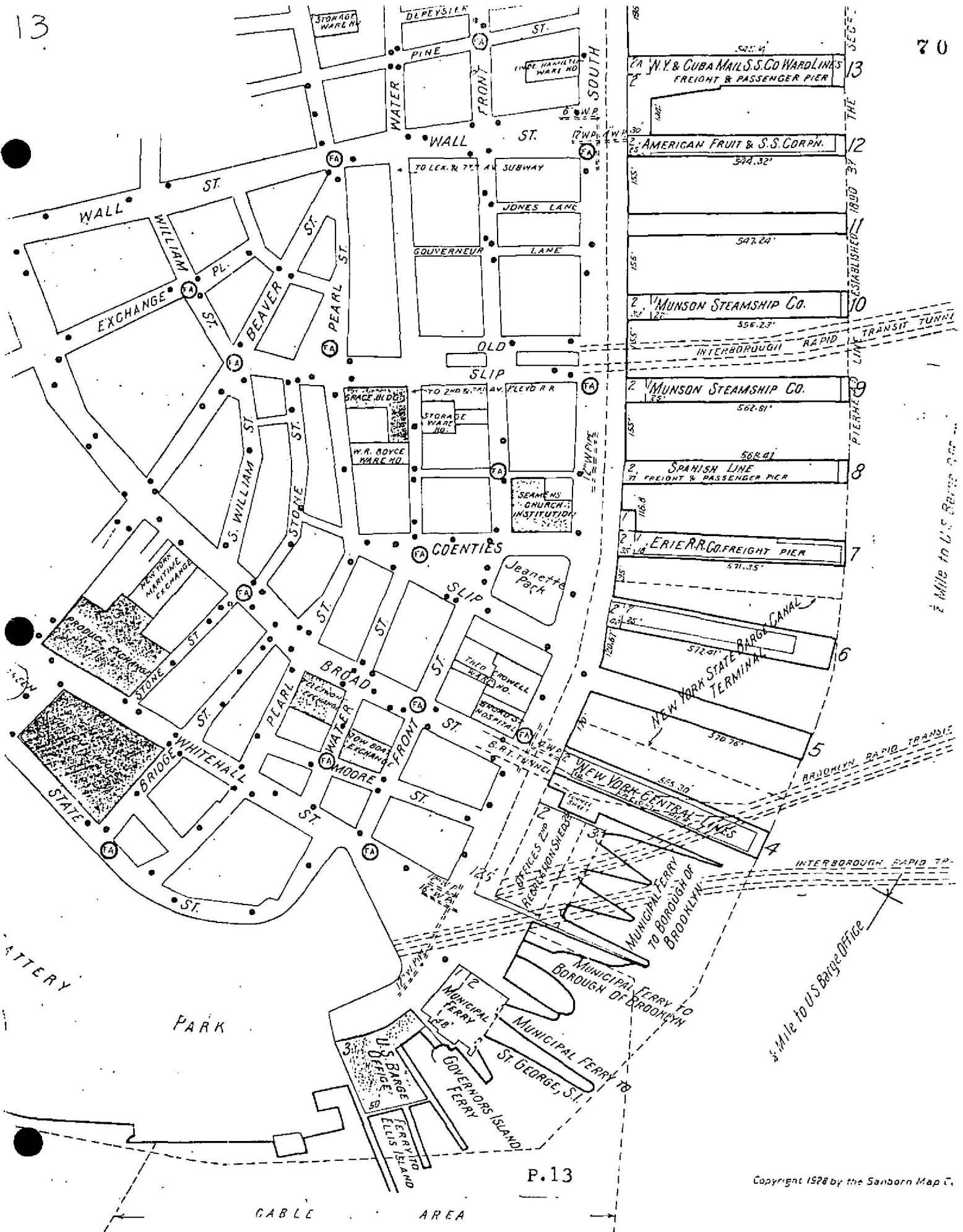


Index Sheet from
Pier Map of New York Harbor,
 published by Sanborn Map Company,
 11 Broadway, New York, N.Y. 1928

Bridges

| | Minimum Clearance \bar{A} over Mean High Water Centers |
|---------------------|--|
| Brooklyn | 128 ft. |
| Williamsburg | 132 ft. |
| Queensborough | 132 ft. |
| Manhattan | 132 ft. |



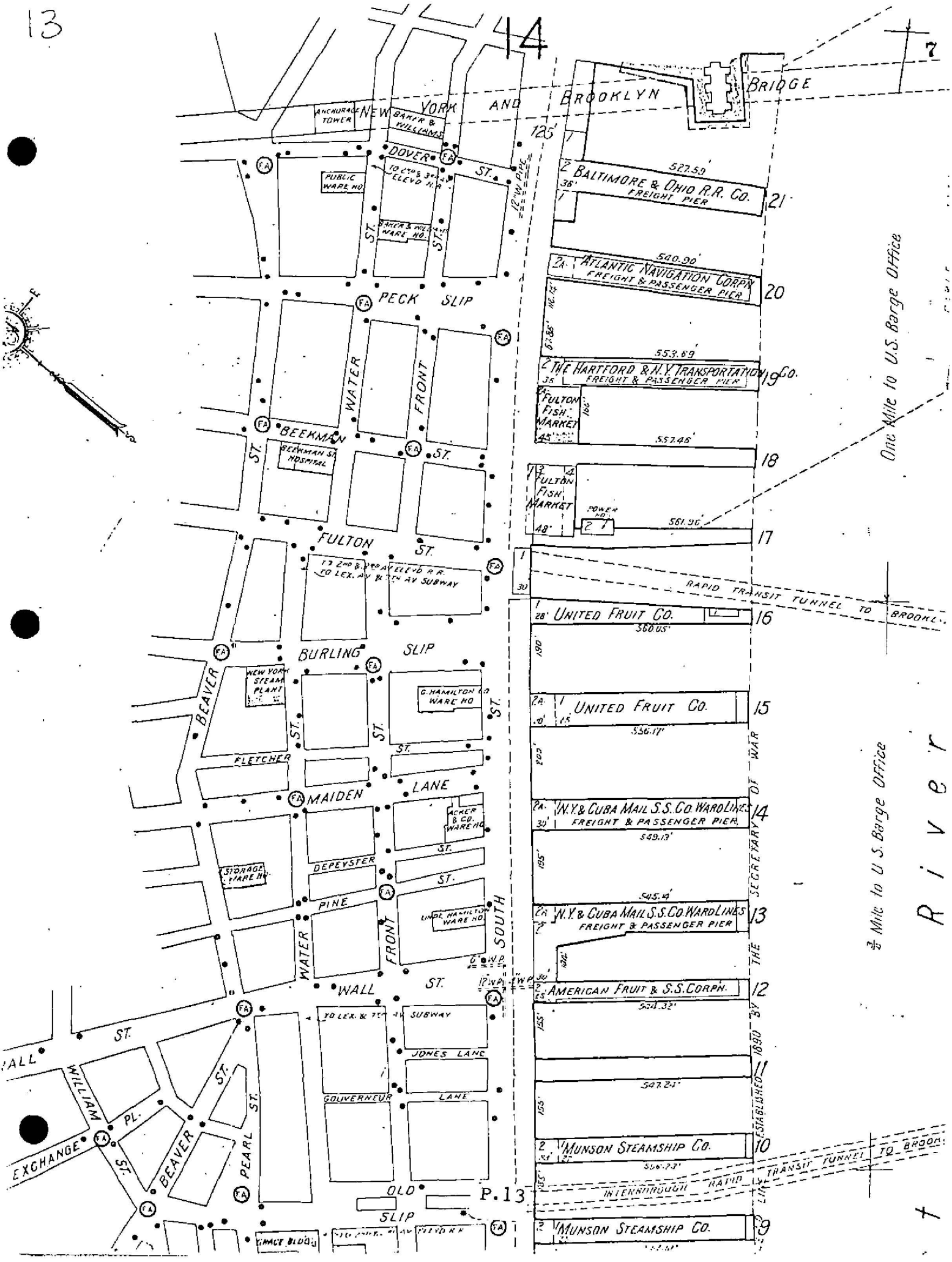
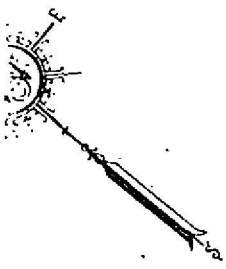


1/2 Mile to U.S. Barge Office

1/2 Mile to U.S. Barge Office

P. 13

CABLE AREA



One Mile to U.S. Barge Office

3/4 Mile to U.S. Barge Office

River

ESTABLISHED 1890 BY THE SECRETARY OF WAR

- 21 BALTIMORE & OHIO R.R. CO. FREIGHT PIER 527.59
- 20 ATLANTIC NAVIGATION CORPN FREIGHT & PASSENGER PIER 540.90
- 19 GO. THE HARTFORD & N.Y. TRANSPORTATION CO. FREIGHT & PASSENGER PIER 553.69
- 18 FULTON FISH MARKET 557.45
- 17 FULTON FISH MARKET 561.96
- 16 UNITED FRUIT CO. 560.65
- 15 UNITED FRUIT CO. 556.17
- 14 N.Y. & CUBA MAIL S.S. CO. WARD LINES FREIGHT & PASSENGER PIER 549.13
- 13 N.Y. & CUBA MAIL S.S. CO. WARD LINES FREIGHT & PASSENGER PIER 545.4
- 12 AMERICAN FRUIT & S.S. CORPN. 551.32
- 10 MUNSON STEAMSHIP CO. 547.24
- 9 MUNSON STEAMSHIP CO. 556.77

RAPID TRANSIT TUNNEL TO BROOKLYN

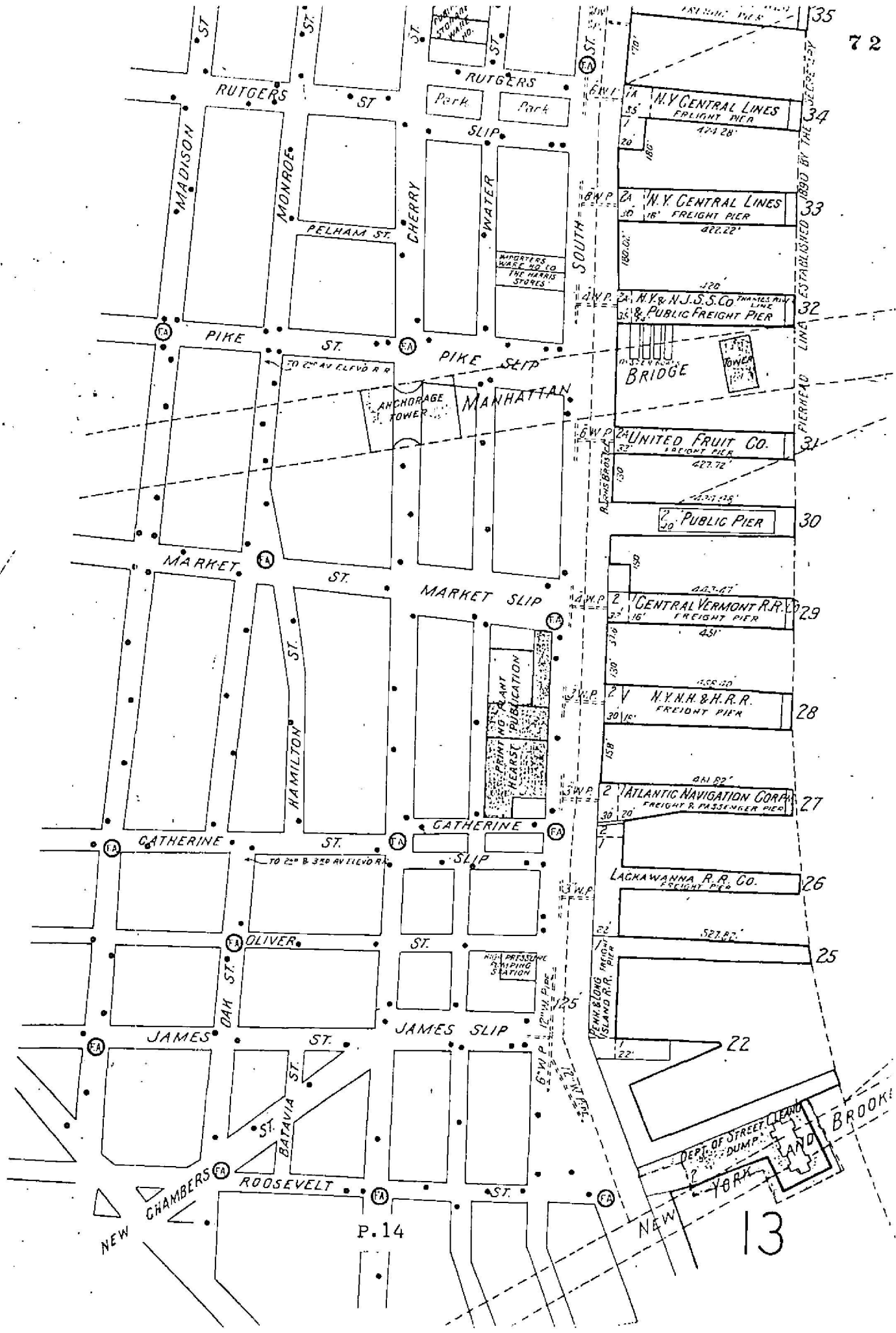
INTERBOROUGH RAPID TRANSIT TUNNEL TO BROOKLYN

17 2ND B. & 100 AV. ELE. 10 H. R. TO LEX. AV. & 127 AV. SUBWAY

10 LEX. & 75 AV. SUBWAY

4

72

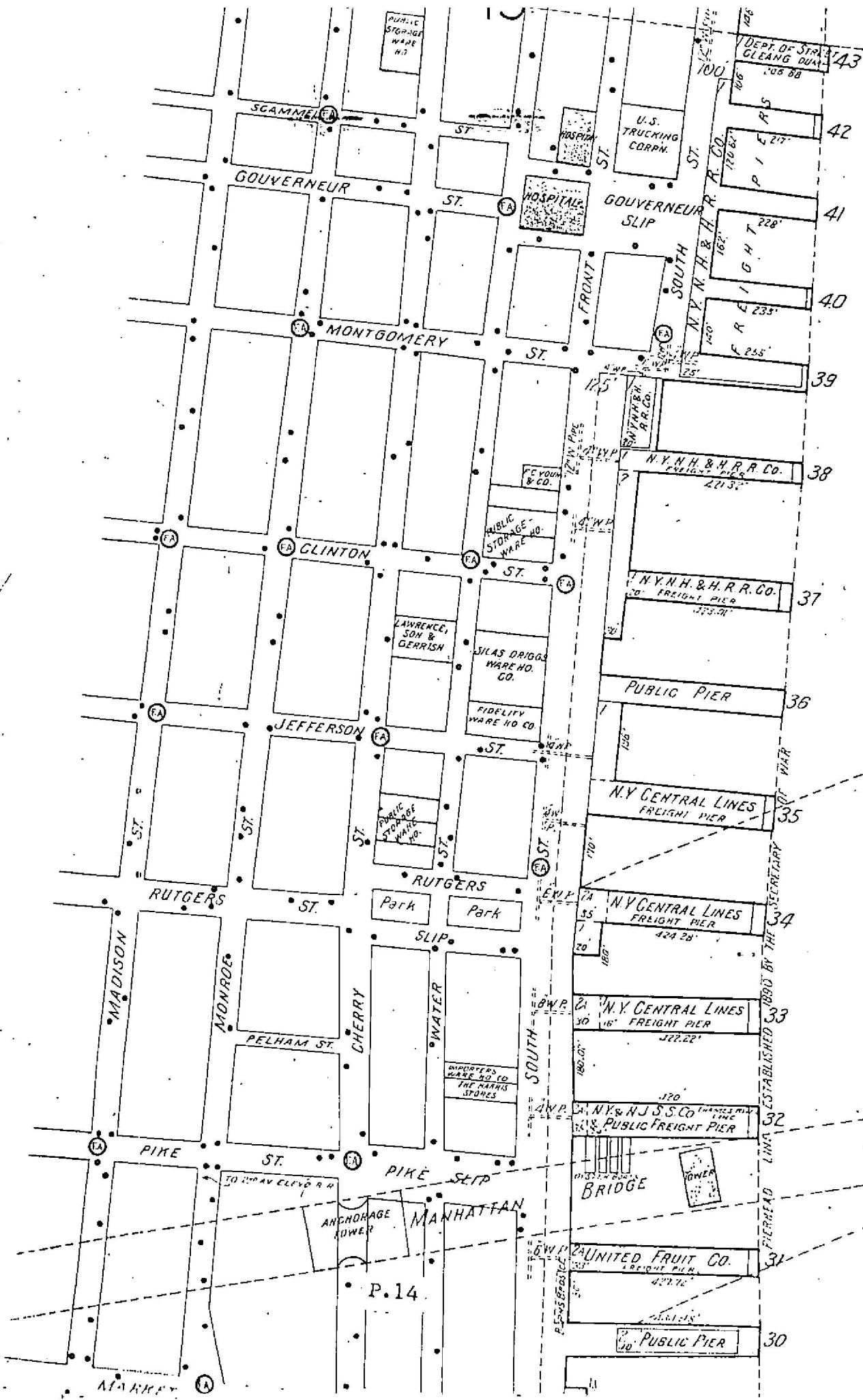


P. 14

13

H

73



1 1/2 Miles to U.S. Barge Office

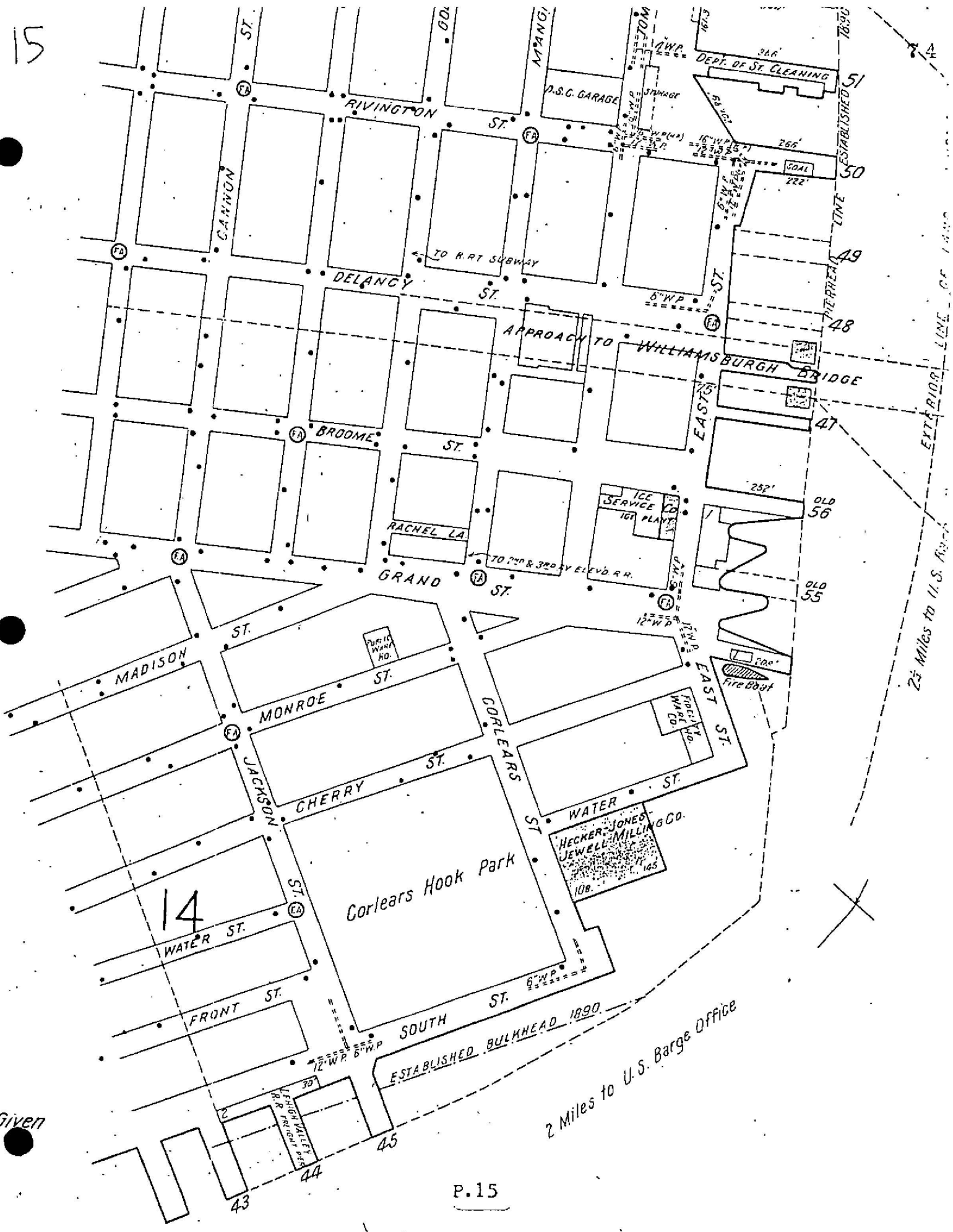
1 1/2 Miles to U.S. Barge Office

SECRETARY OF WAR ESTABLISHED 1880 BY THE

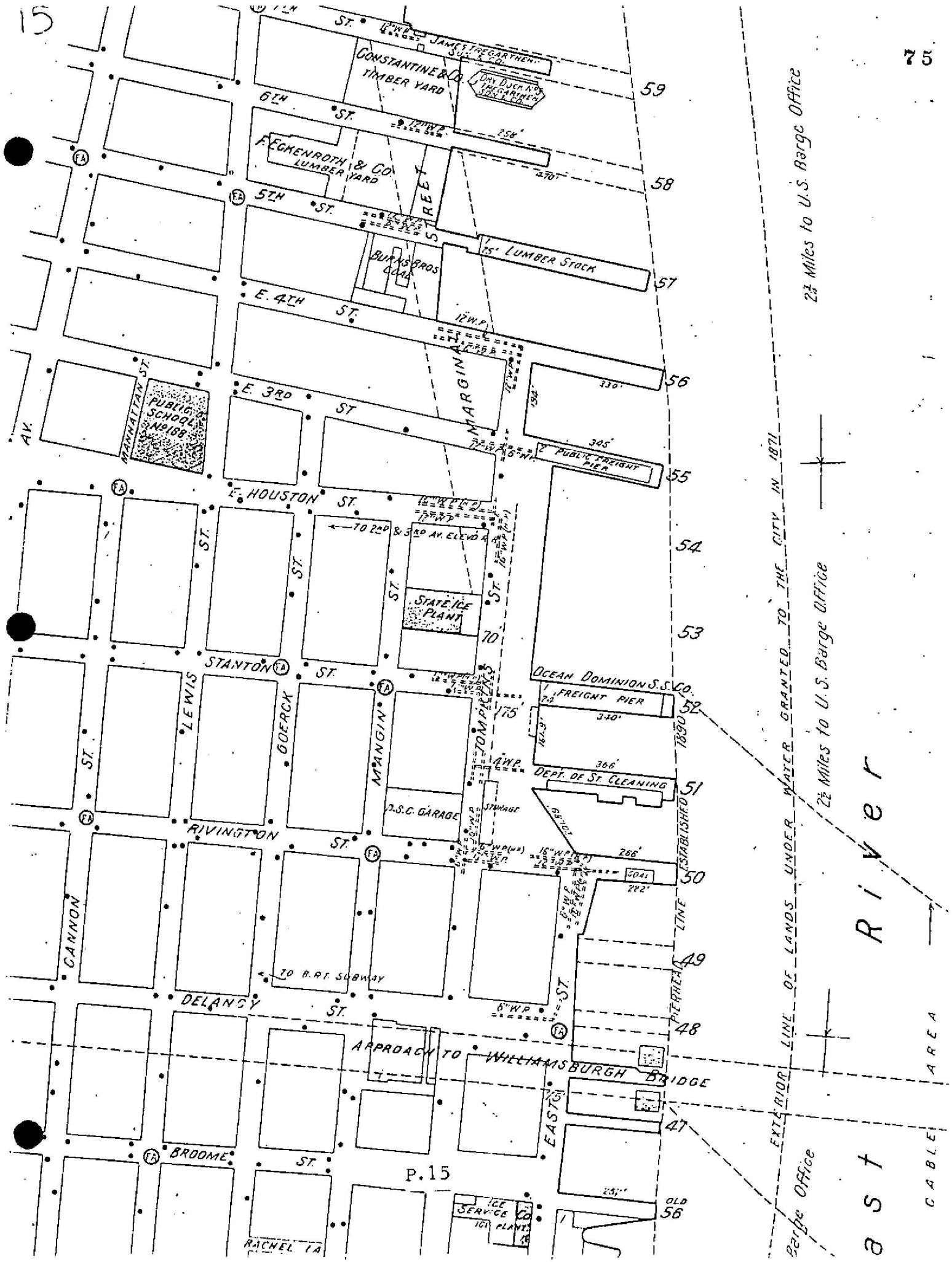
P. 14

73

15



Given



2 1/2 Miles to U.S. Barge Office

2 1/2 Miles to U.S. Barge Office

River

East

CABLE AREA

P. 15

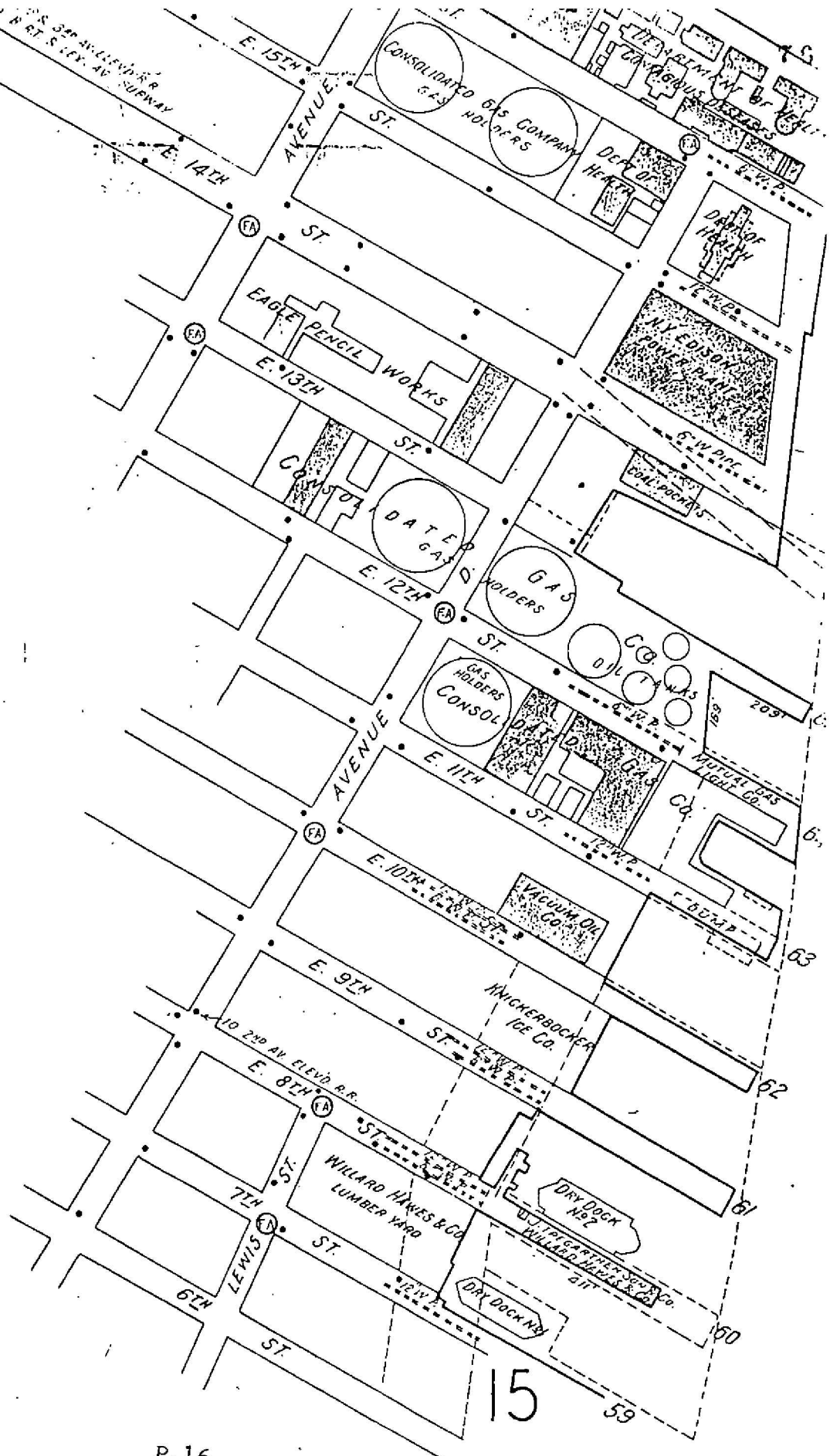
OLD 56

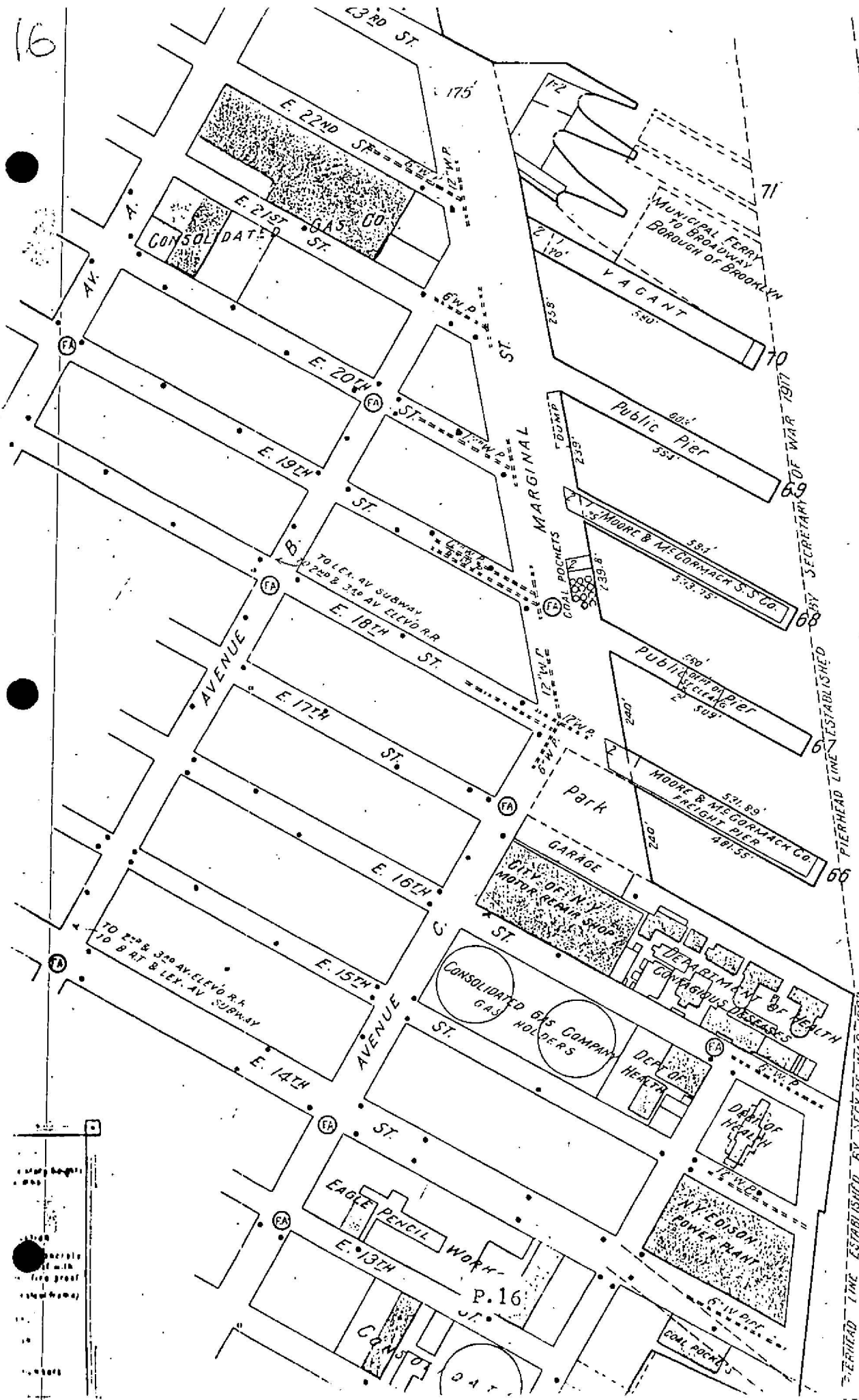
- KEY -

Figures in buildings denote story heights
 Figures in streets denote widths

- Ⓜ Fire alarm box
- Hydrant
- ▣ Fire proof construction
- ▤ Brick, Stone, Hollow concrete
- ▥ Cement block, fire proof with exceptions, Semi-fire proof
- ▦ Iron buildings (iron on steel frame)
- ▧ Iron clad buildings
- ▨ Frame construction

5 Adjoining sheet numbers





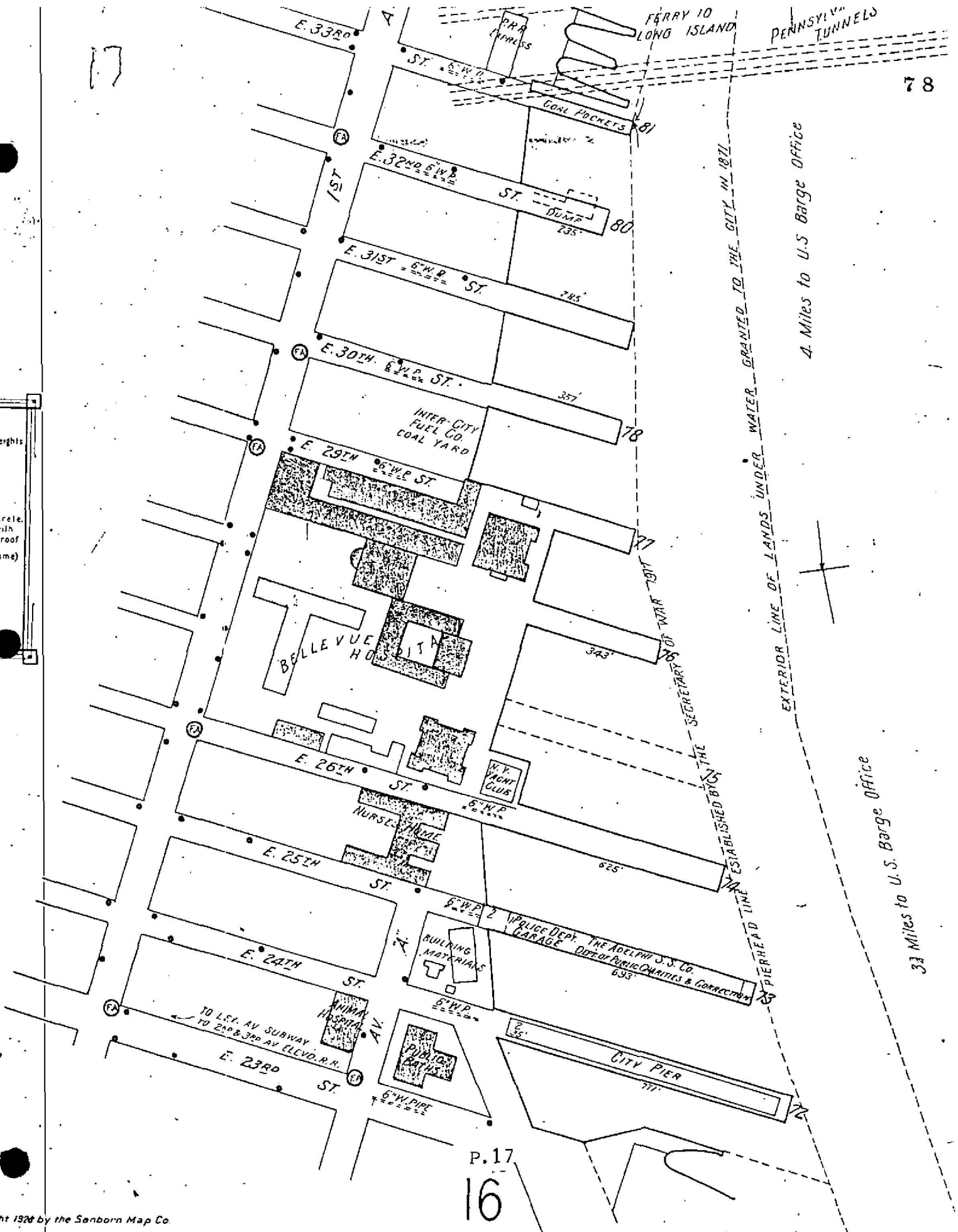
3 1/2 Miles to U.S. Barge Office

PIERHEAD LINE ESTABLISHED BY SECRETARY OF WAR 1917

3 1/2 Miles to U.S. Barge Office

heights
scale
with
proof
frame

37



78

ESTABLISHED BY THE SECRETARY OF WAR IN 1871

4 Miles to U.S. Barge Office

3.3 Miles to U.S. Barge Office

P. 17
16

E. 33RD ST.

ST. 6' W.P.

FERRY TO LONG ISLAND

PENNSYLVANIA TUNNELS

P.R.R. EXPRESS

COAL POCKETS 81

E. 32ND 6' W.P. ST.

ST. DUNGEON 235

E. 31ST 6' W.P. ST.

245

E. 30TH 6' W.P. ST.

357

INTER-CITY FUEL CO. COAL YARD

78

E. 29TH 6' W.P. ST.

37

BELLEVUE HOSPITAL

343

PIERHEAD LINE ESTABLISHED BY THE SECRETARY OF WAR IN 1871

E. 26TH 6' W.P. ST.

N.Y. YOUNG CLUB

625

NURSE BUILDING

E. 25TH ST.

6' W.P. 2

POLICE DEPT. GARAGE THE ADELPHI S.S. CO. OFFICE OF PUBLIC CHARITIES & CONNECTIONS 633

38

E. 24TH ST.

BUILDING MATERIALS

TO L.S.I. AV SUBWAY TO 2ND & 3RD AV ELEV. R.R.

MINNA HOSPITAL

6' W.P.

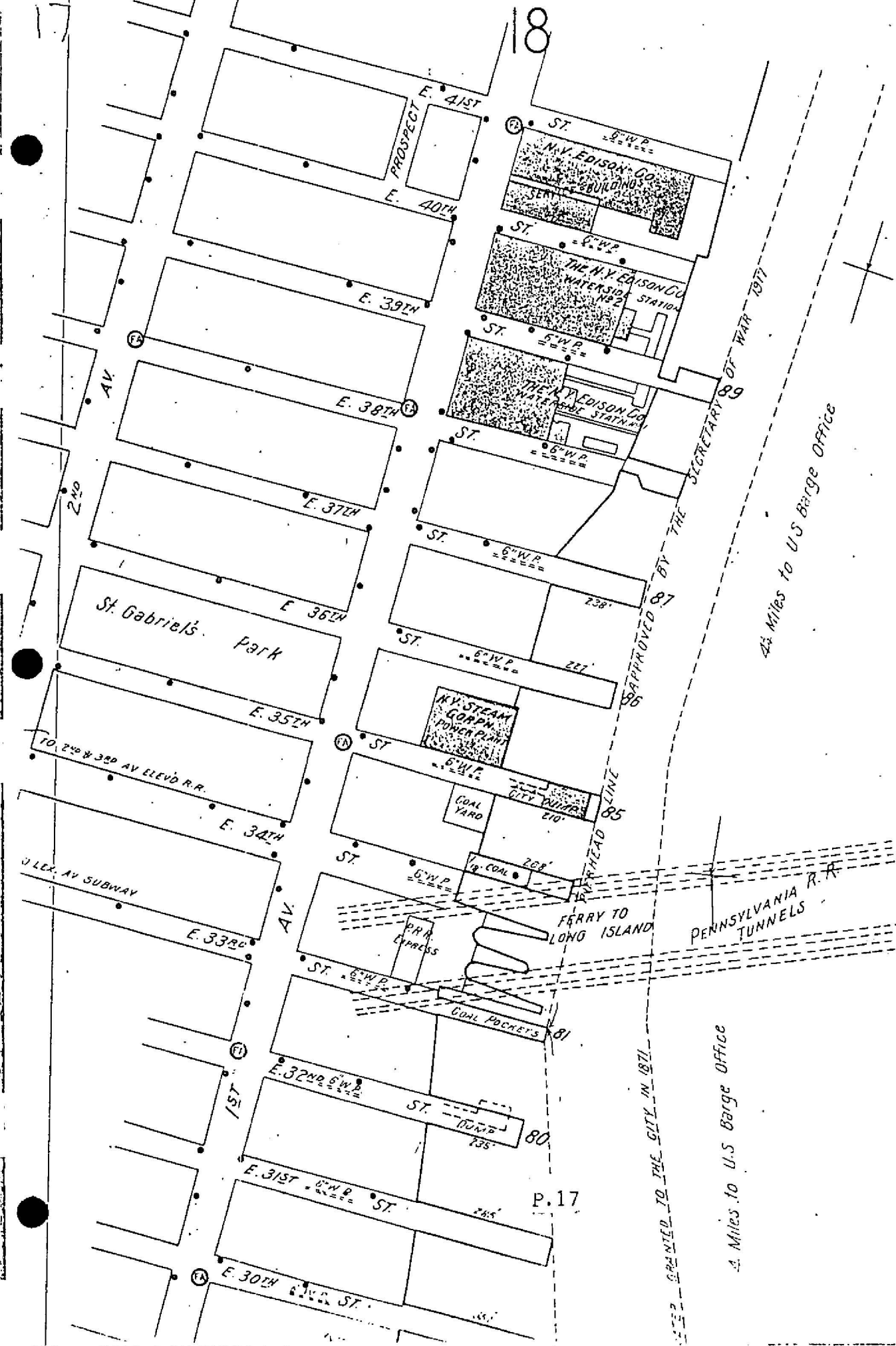
PUBLIC BATHS

E. 23RD ST.

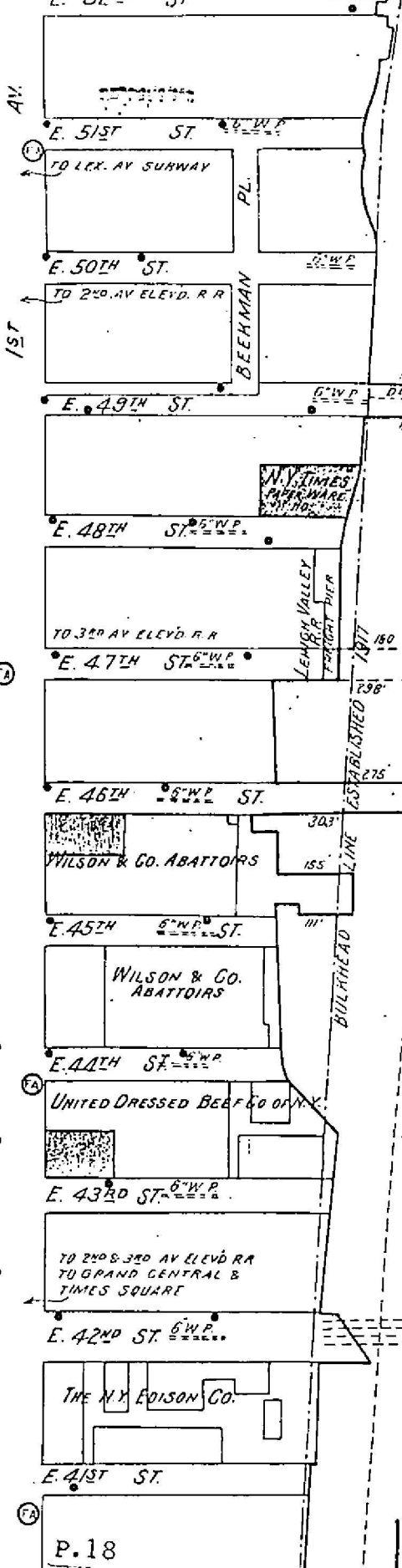
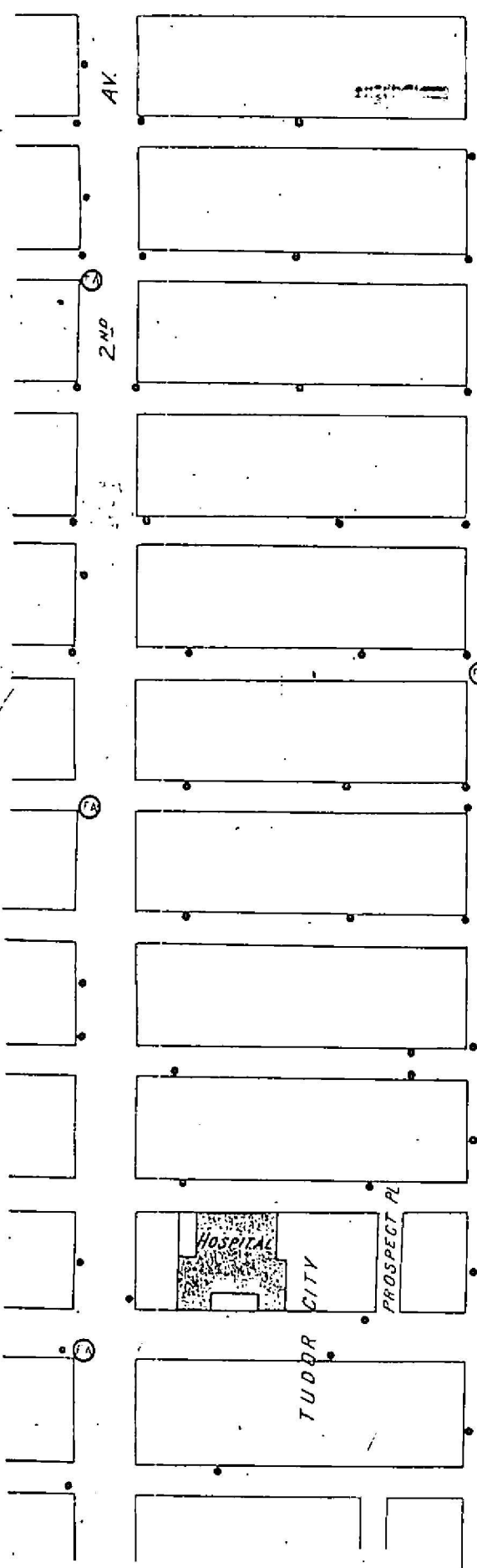
6' W.P. 2

CITY PIER

377



ast River

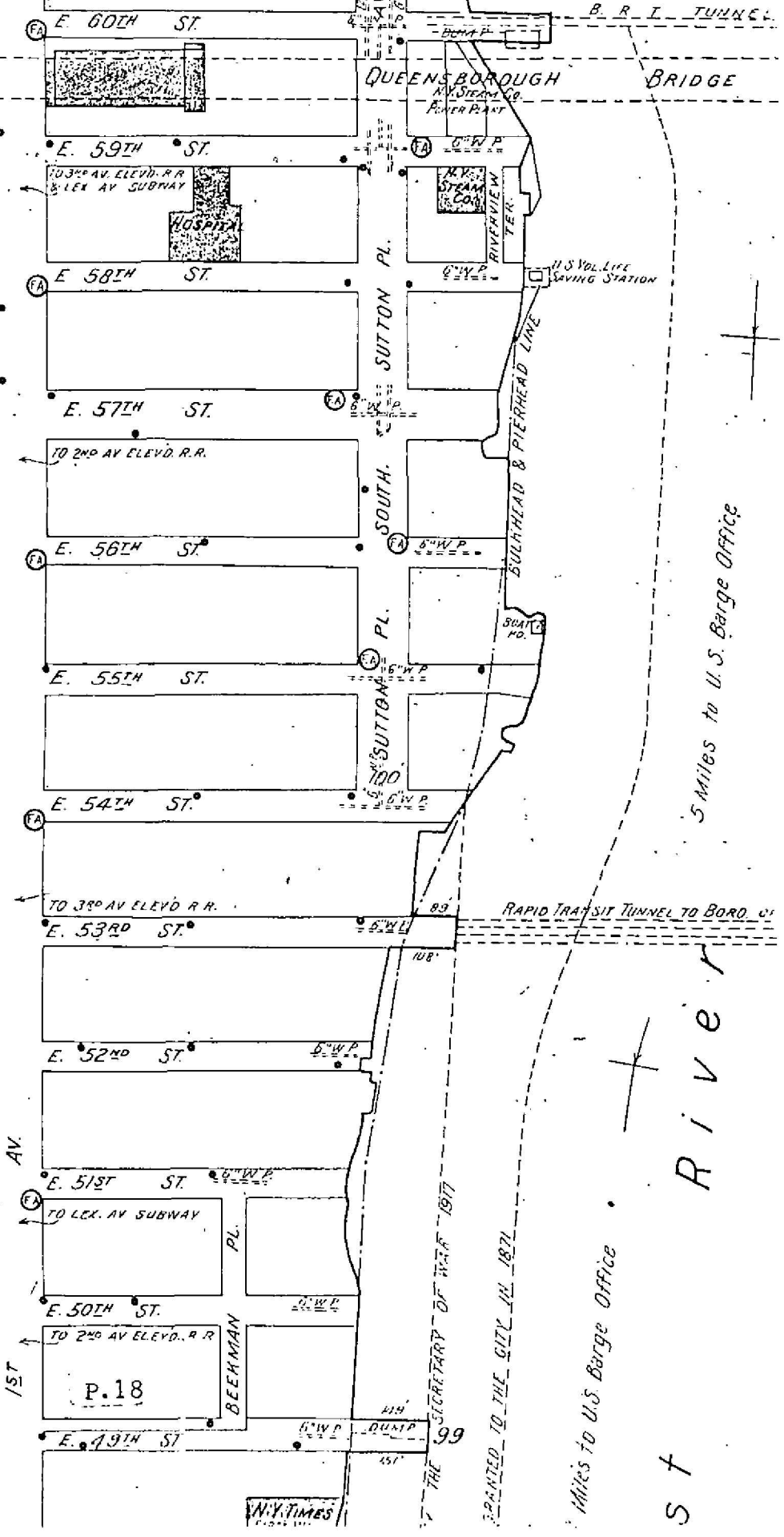
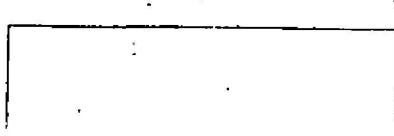
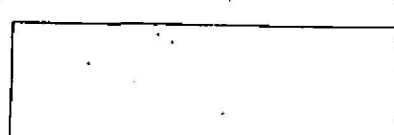
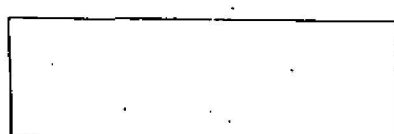
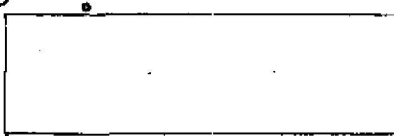
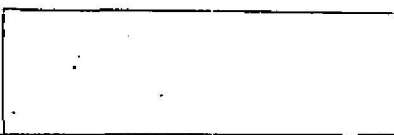
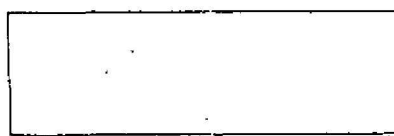
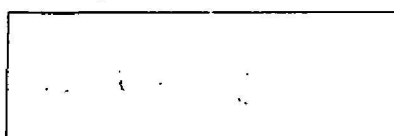
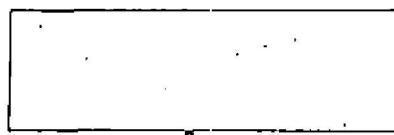


SECRETARY OF WAR 1871
 & APPROVED BY THE
 ESTABLISHED 1877
 BULWARK LINE
 PIERHEAD LINE MODIFIED 96
 EXTERIOR LINE OF LANDS UNDER WATER GRANTED TO THE CITY IN 1871
 42 MILES TO U.S. BARGE OFFICE
 43 MILES TO U.S. BARGE OFFICE
 INTERBOROUGH RAILROAD

18

19

81



AV

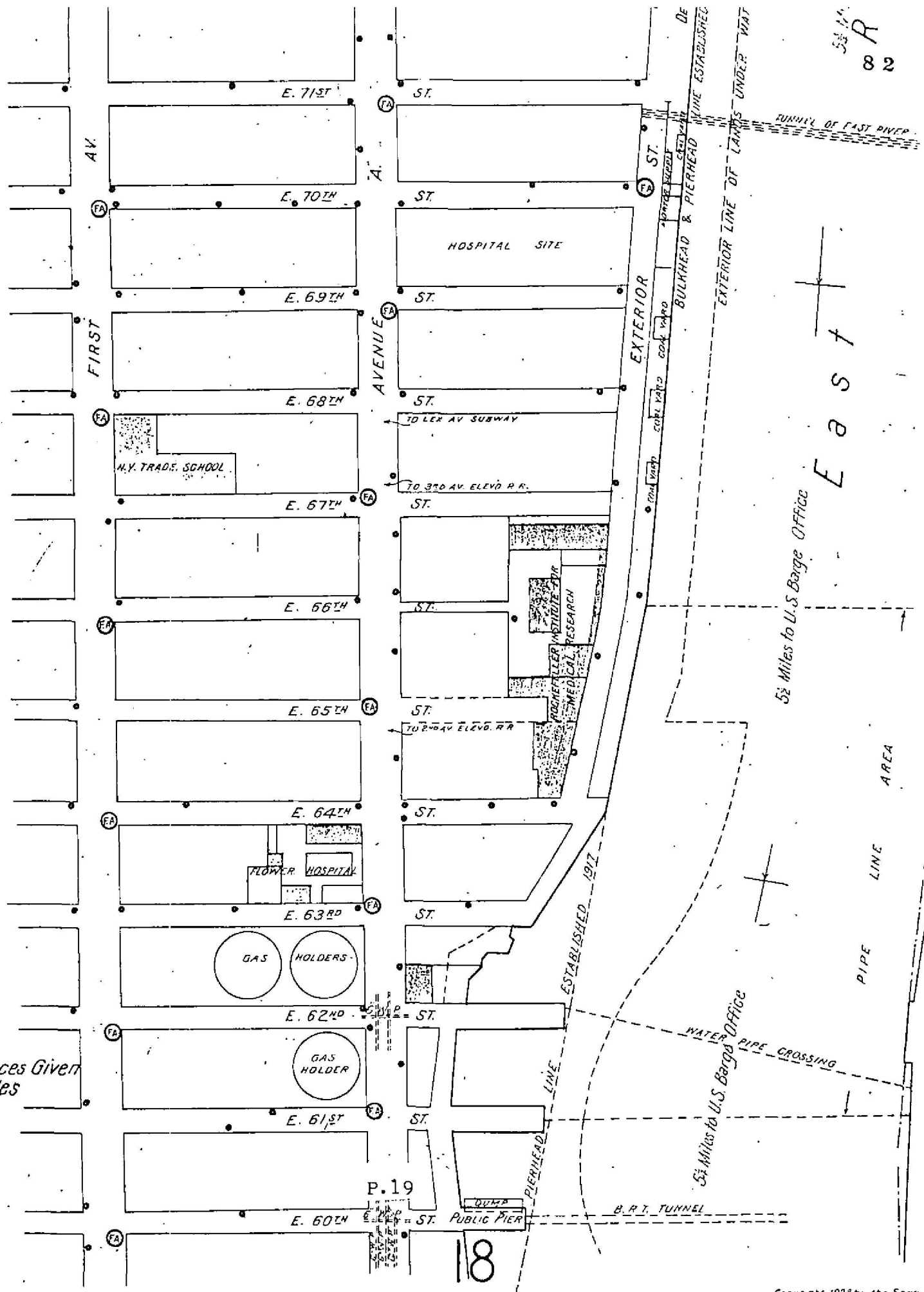
2ND

AV

1ST

River St

Distances Given
in Statistical Miles



P. 19

18

FIRST AV.

E. 79TH

E. 78TH

E. 77TH

E. 76TH

E. 75TH

E. 74TH

E. 73RD

E. 72ND

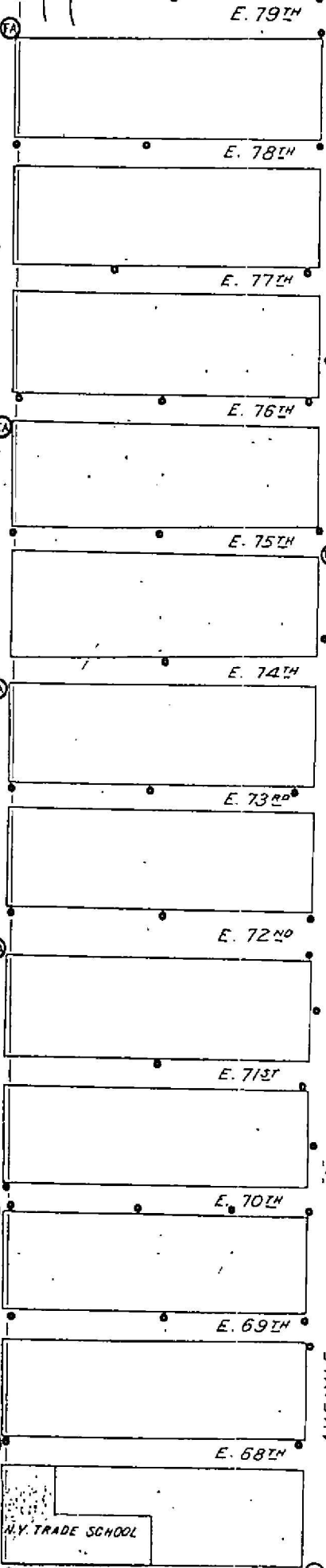
E. 71ST

E. 70TH

E. 69TH

E. 68TH

E. 67TH



ST.

ST.

ST.

ST.

ST.

ST.

ST.

ST.

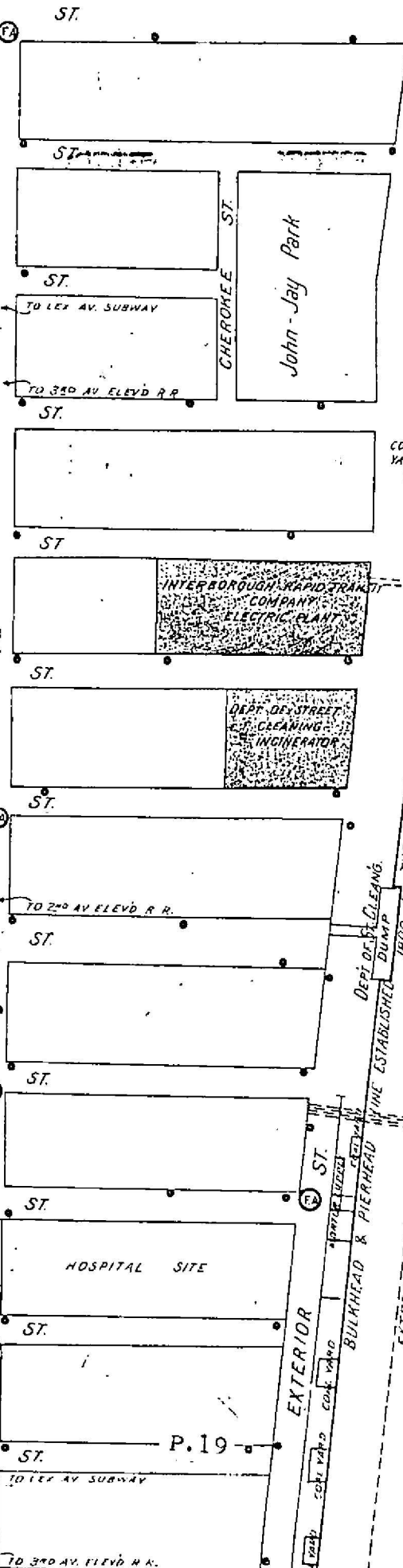
ST.

ST.

ST.

ST.

ST.



CHEROKEE ST.

John Jay Park

INTERBOROUGH RAPID TRANSIT COMPANY
ELECTRIC PLANT

DEPT. OF STREET
CLEANING
INCINERATOR

COLE
WARD

DEPT. OF CLEANING
ESTABLISHED DUMP
1890 BY THE SECRETARY OF WAR

EXTERIOR

BULKHEAD & PIERHEAD

EXTERIOR LINE OF LANDS UNDER WATER GRANTED TO CITY IN 1871

TUNNEL OF EAST RIVER GAS CO.

BULKHEAD & PIERHEAD LINE ESTABLISHED 1890 BY THE SECRETARY OF WAR

6 Miles to U.S. Barge Office

5 1/2 Miles to U.S. Barge Office

R I V E R

E a s t

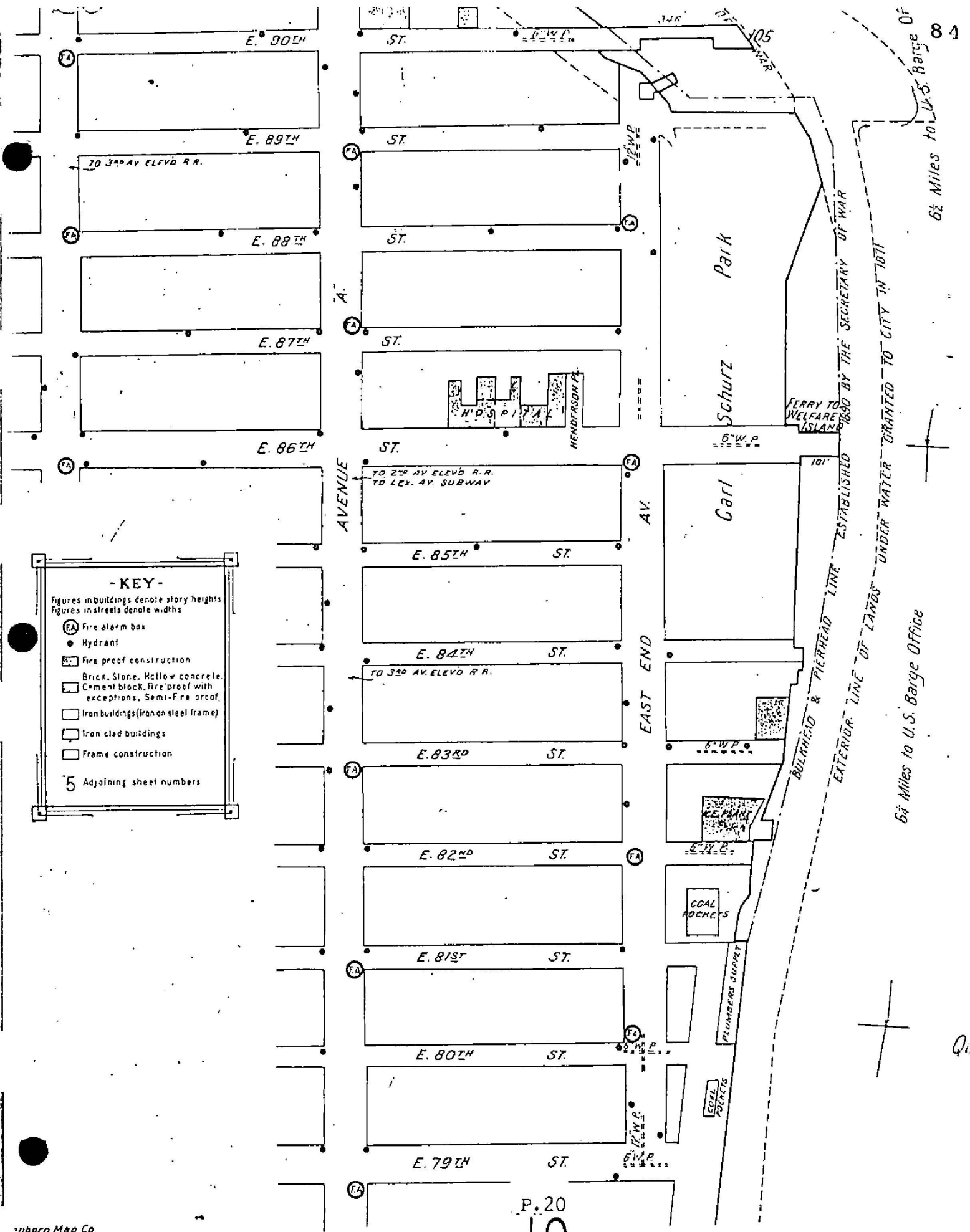
6 1/2 Miles to U.S. Barge Office

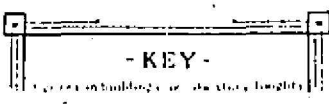
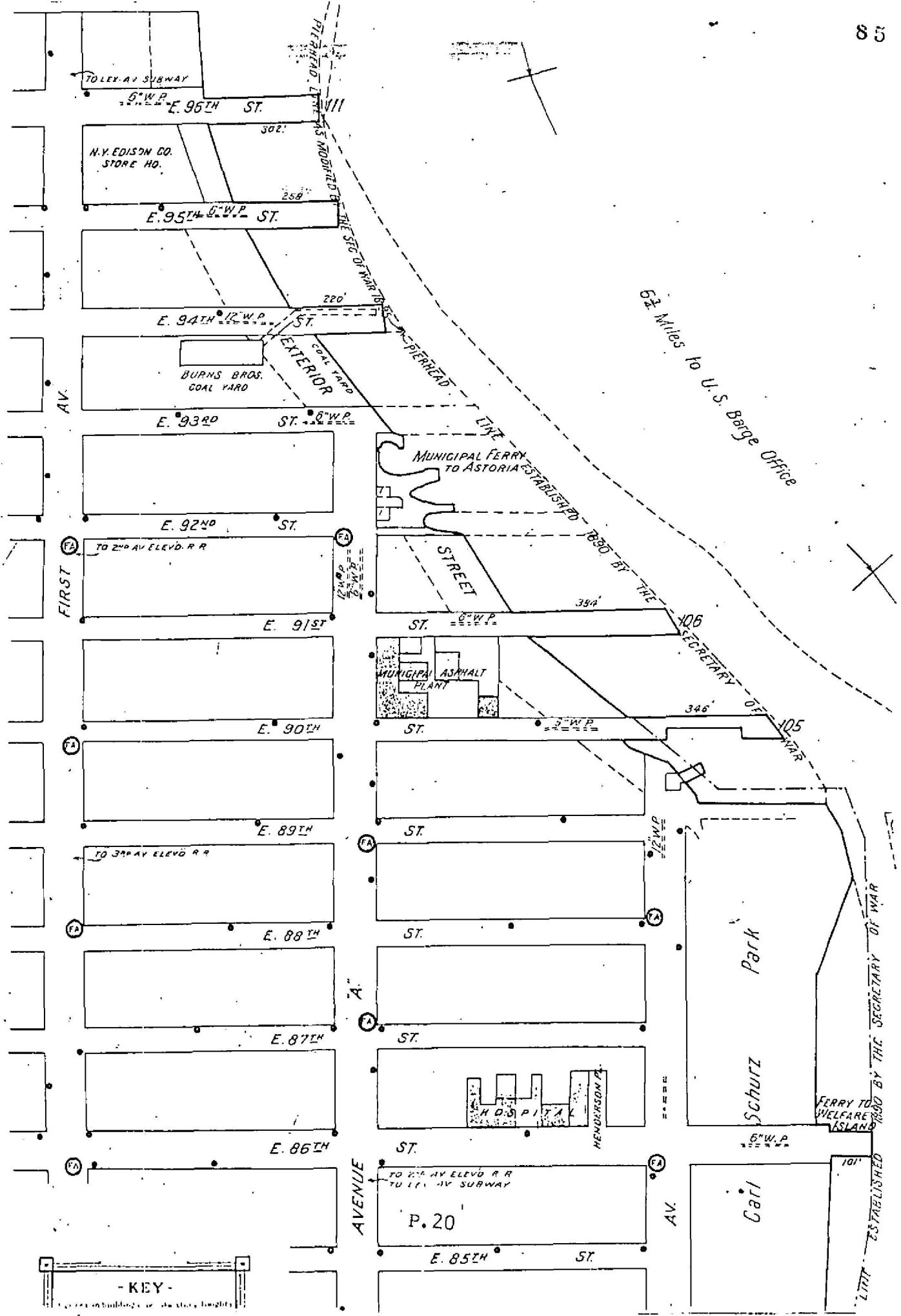
Q.

- KEY -

Figures in buildings denote story heights
 Figures in streets denote widths

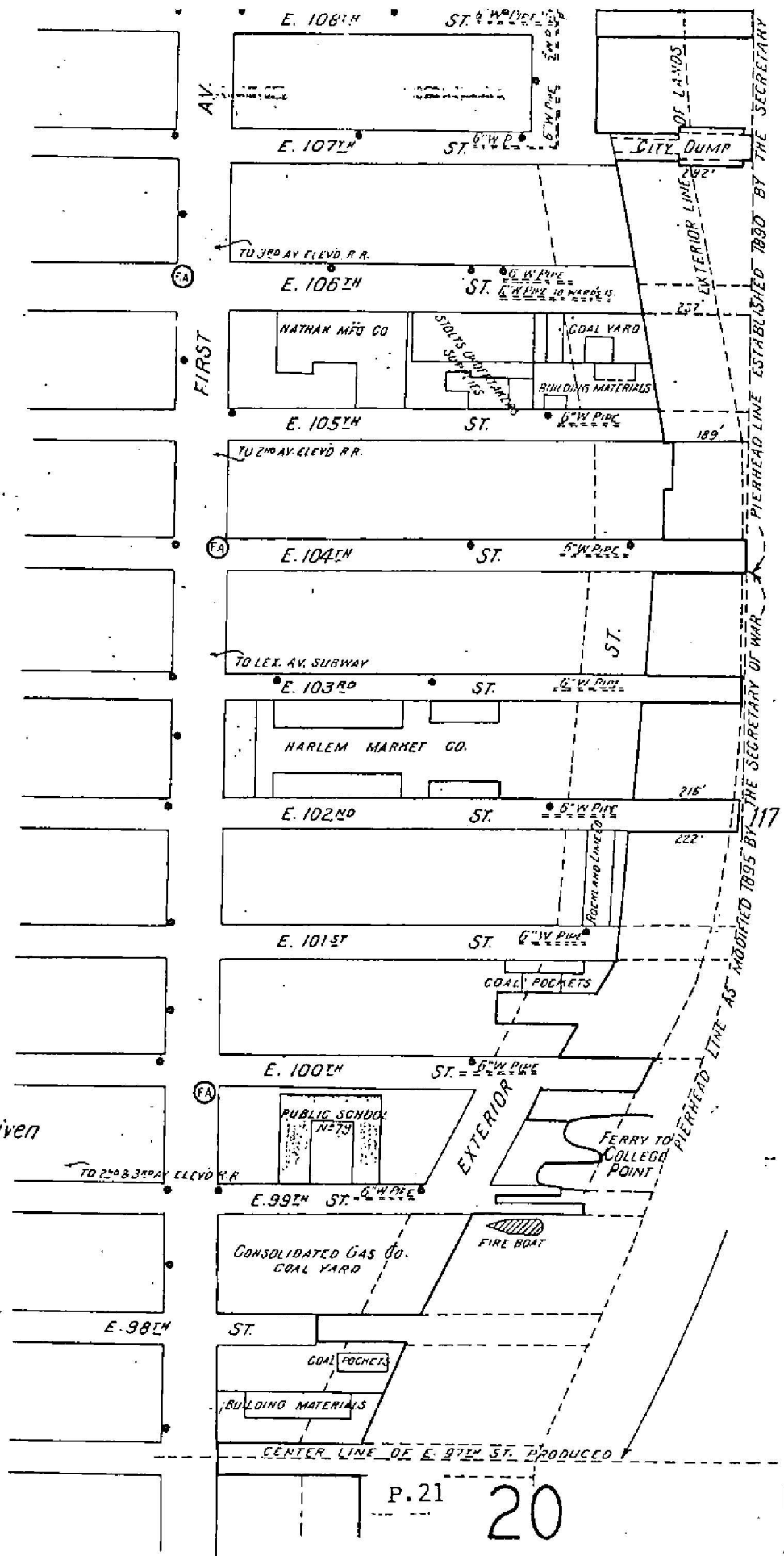
- (FA) Fire alarm box
- Hydrant
- (FP) Fire proof construction
- Brick, Stone, Hollow concrete
- Cement block, fire proof with exceptions, Semi-Fire proof
- Iron buildings (iron on steel frame)
- Iron clad buildings
- Frame construction
- 5 Adjoining sheet numbers





21

86



CABLE AND PIPE LINE

7 Miles to U.S. Barge Office

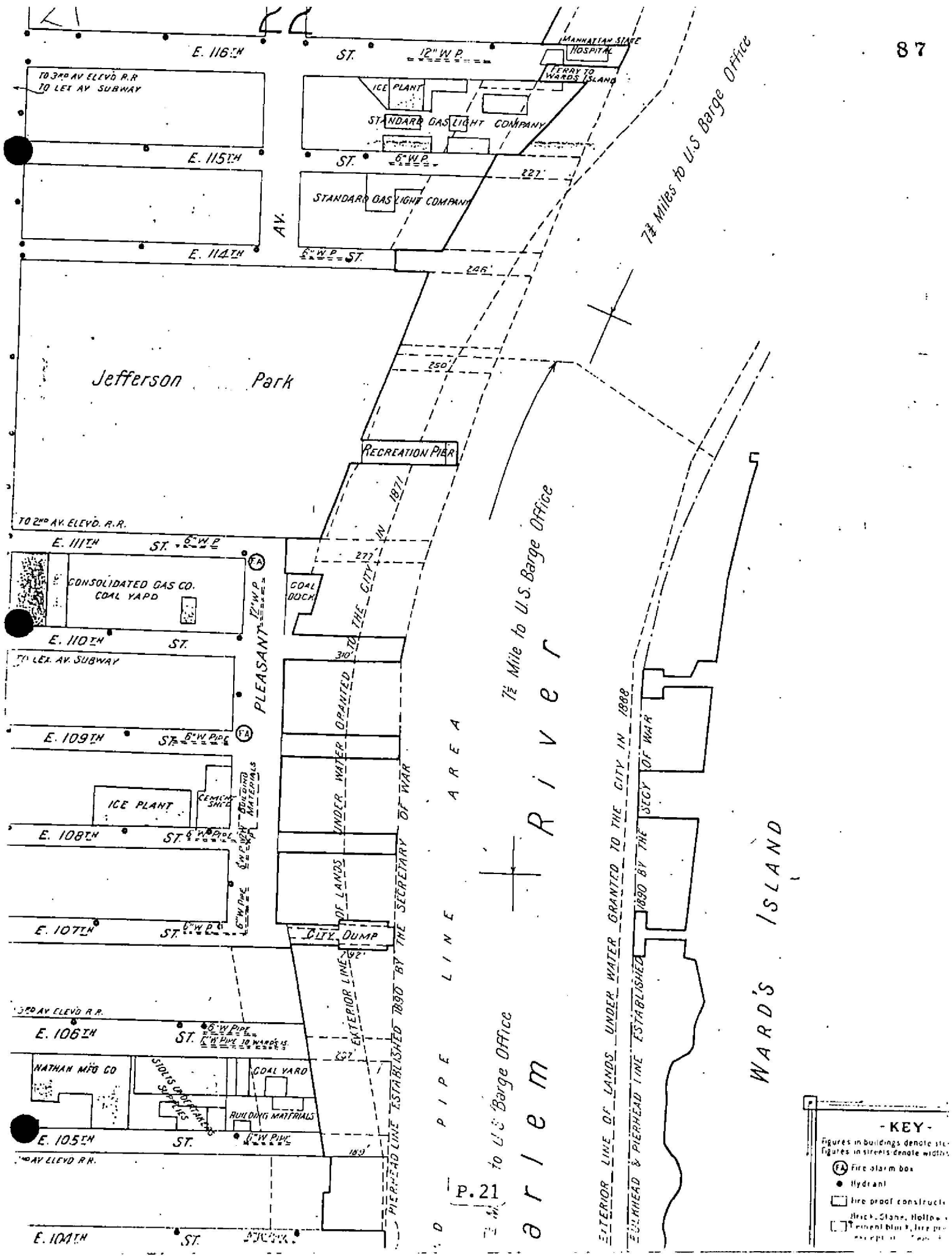
7 1/2 Miles to U.S. Barge Office

Harlem

Quarter Mile Distances Given in Nautical Miles

P. 21

20



E. 116TH ST.

ST.

12" W.P.

MANHATTAN STATE HOSPITAL

FERRY TO WARDS ISLAND

TO 3RD AV ELEV. R.R. TO LET AV. SUBWAY

ICE PLANT

STANDARD GAS LIGHT COMPANY

E. 115TH ST.

ST.

6" W.P.

227'

STANDARD GAS LIGHT COMPANY

E. 114TH ST.

6" W.P. ST.

246'

Jefferson Park

RECREATION PIER

7 1/2 Miles to U.S. Barge Office

TO 2ND AV. ELEV. R.R.

E. 111TH ST.

ST. 6" W.P.

277'

CONSOLIDATED GAS CO. COAL YARD

COAL DOCK

TO THE CITY IN 1871

E. 110TH ST.

ST.

TO LET AV. SUBWAY

E. 109TH ST.

ST. 6" W.P.

310'

UNDER WATER GRANTED TO THE SECRETARY OF WAR

7 1/2 Mile to U.S. Barge Office

PLEASANT ST.

ICE PLANT

CEMENT SHED BUILDING MATERIALS

E. 108TH ST.

ST. 6" W.P.

E. 107TH ST.

ST. 6" W.P.

CITY DUMP

192'

EXTERIOR LINE

PIPE LINE AREA

River

EXTERIOR LINE OF LANDS UNDER WATER GRANTED TO THE CITY IN 1888

PIERHEAD & PIERHEAD LINE ESTABLISHED 1880 BY THE SECY OF WAR

WARDS ISLAND

TO 3RD AV ELEV. R.R.

E. 106TH ST.

ST.

6" W.P. ST. 6" W.P. TO WARDS IS.

NATHAN MFG CO

STEEL SUPPLIES

COAL YARD

BUILDING MATERIALS

E. 105TH ST.

ST.

6" W.P. ST.

TO 3RD AV ELEV. R.R.

E. 104TH ST.

ST.

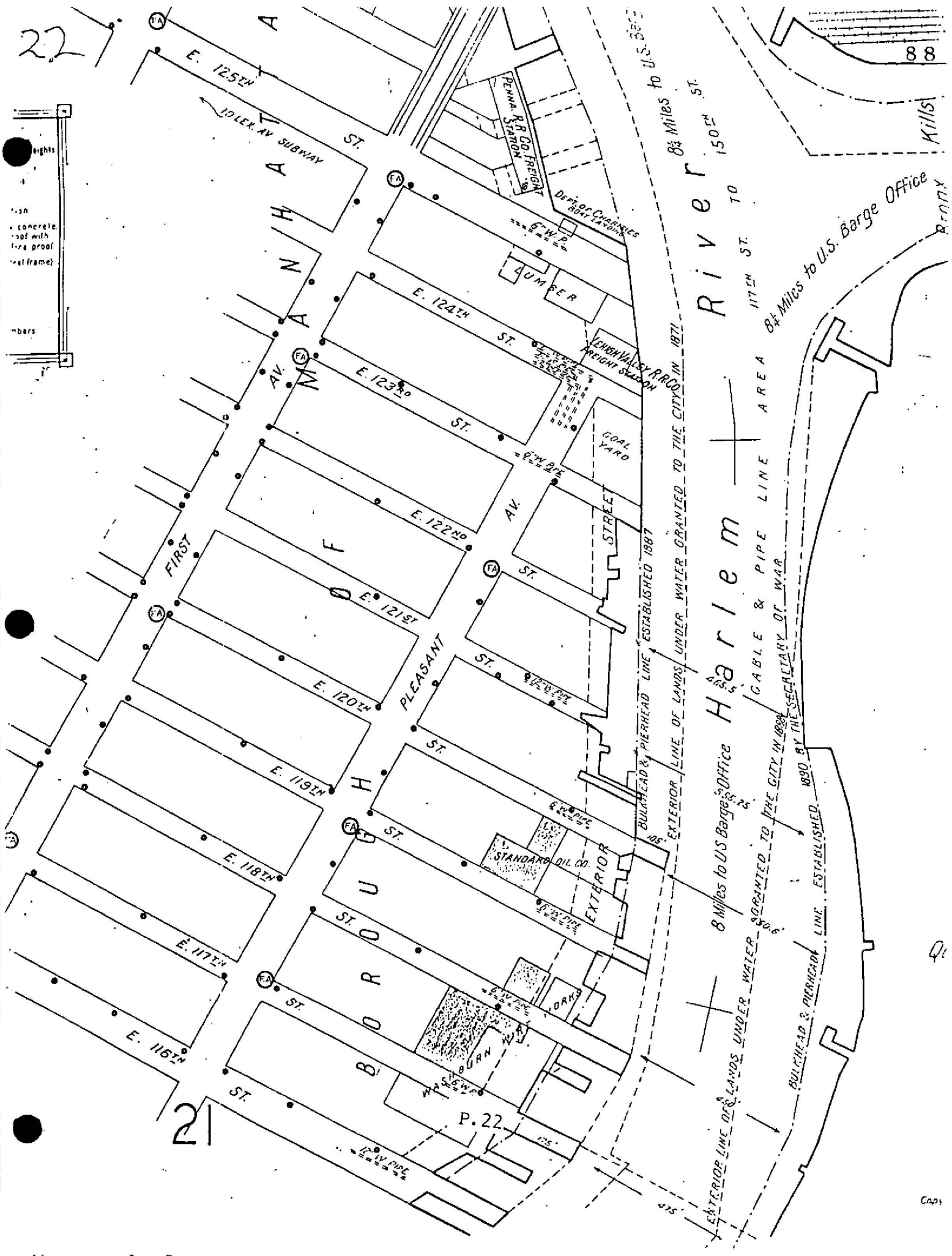
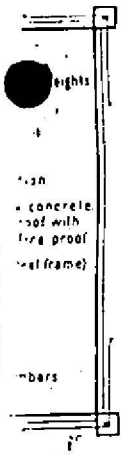
P. 21

to U.S. Barge Office

- KEY -

- Figures in buildings denote area; figures in streets denote width.
- (FA) Fire alarm box
- Hydrant
- [] fire proof construction
- [] Brick, Stone, Hollow
- [] Present blue, fire proof except at corners

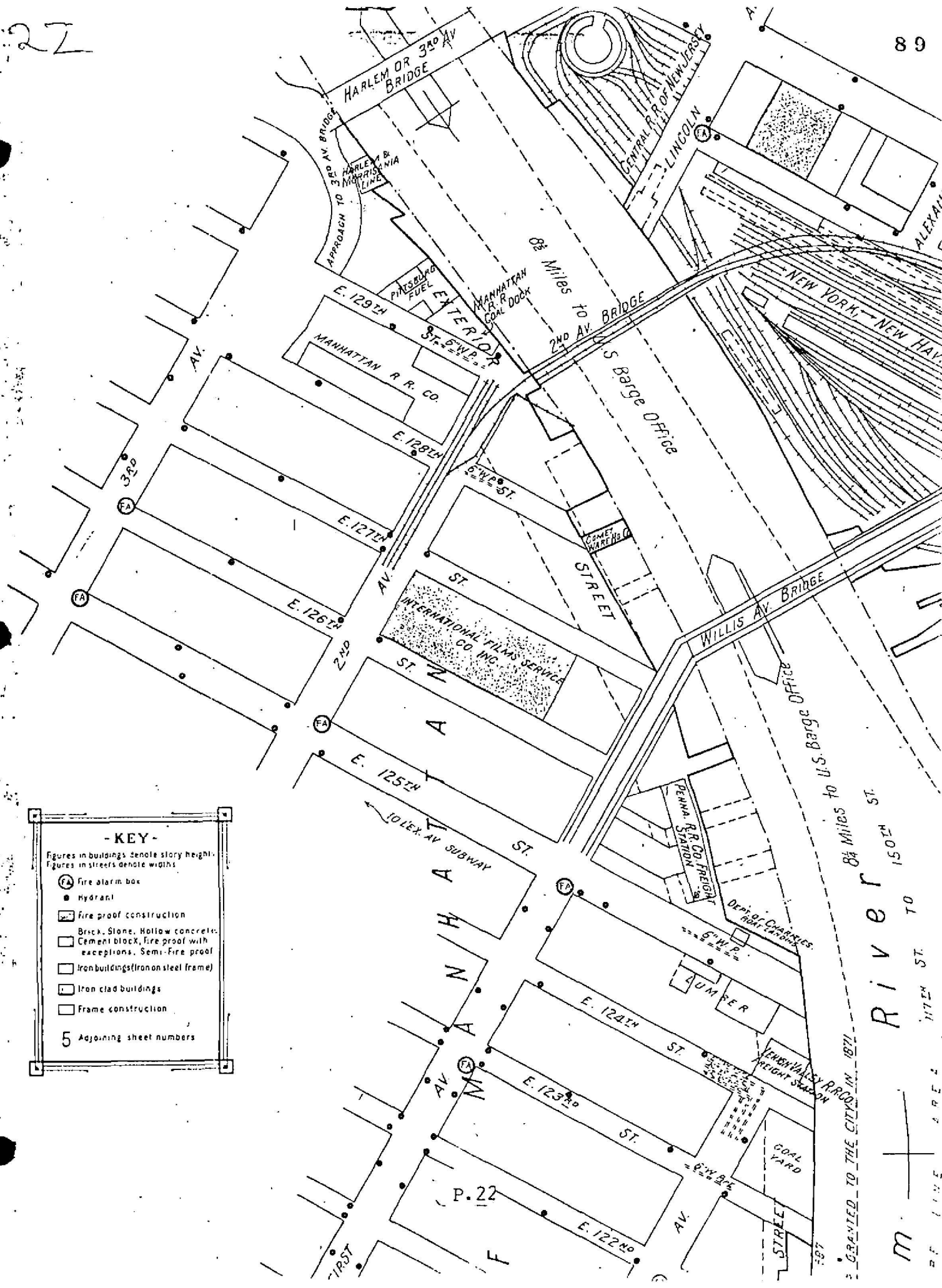
22



88

21

P. 22



- KEY -

Figures in buildings denote story height.
Figures in streets denote widths

- Ⓜ fire alarm box
- Hydrant
- ▢ fire proof construction
- ▢ Brick, Stone, Hollow concrete
- ▢ Cement block, fire proof with exceptions. Semi-Fire proof
- ▢ Iron buildings (Iron on steel frame)
- ▢ Iron clad buildings
- ▢ Frame construction
- 5 Adjoining sheet numbers

M. RIVER
 GRANTED TO THE CITY IN 1871
 84 Miles to U.S. Barge Office
 84 Miles to 150th St.
 117th St. TO
 P. LINE AREA
 187

P. 22